Hecate Strait Groundfish Bottom Trawl Survey, May 25th to June 29th, 2005

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V9T 6N7

2008

Canadian Manuscript Report of
Fisheries and Aquatic Sciences 2805

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Cat. No. 97-4/2805E ISSN 0706-6473

Correct citation for this publication:

Workman, G.D, Rutherford, K.L., and Olsen, N. 2008. Hecate Strait groundfish bottom trawl survey, May 25th to June 29th, 2005. Can. Manuscr. Rep. Fish. Aquat. Sci. 2805: vi + 53 p.

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ABSTRACT

Workman, G.D, Rutherford, K.L., and Olsen, N. 2008. Hecate Strait groundfish bottom trawl survey, May 25th to June 29th, 2005. Can. Manuscr. Rep. Fish. Aquat. Sci. 2805: vi + 53 p.

A bottom trawl survey of Hecate Strait was conducted on the fishing vessel F/V Frosti between May 25th and June 29th, 2005. While surveys have been conducted in Hecate Strait for over 20 years this was the first in what is intended to be a long-term survey series, coordinated with other area-specific surveys that together cover the continental shelf and upper slope of most of the British Columbia coast. The objective of these surveys is to provide fishery-independent abundance indices of all demersal fish species available to bottom trawling, as well as to collect biological samples of selected species.

The survey conducted 226 successful tows from a total of 236. The mean catch per successful tow was 426 kg, averaging about 20 different species of fish and invertebrates in each. The most abundant fish species encountered was arrowtooth flounder followed by spotted ratfish, and spiny dogfish. Biological data, including individual length, weight, sex, maturity, and age structure were collected from 55 different species of fish. Oceanographic data and net geometry were also recorded for most tows, including water temperature, depth, headrope height, and doorspread.

RÉSUMÉ

Workman, G.D; Rutherford, K.L., et Olsen, N. 2008. Relevé au chalut de fond des poissons démersaux réalisé dans le détroit d'Hécate du 25 mai au 29 juin 2005. Can. Manuscr. Rep. Fish. Aquat. Sci. 2805 : vi + 53 p.

Un relevé au chalut de fond a été réalisé dans le détroit d'Hécate par le bateau de pêche Frosti du 25 mai au 29 juin 2005. Bien que des échantillonnages aient été réalisés dans le détroit d'Hécate pendant 20 ans, ce relevé est le premier d'une série d'échantillonnages qui se veulent à long terme et qui sont coordonnés avec d'autres échantillonnages par secteur couvrant, ensemble, le plateau continental et la partie supérieure du talus de la majeure partie de la côte de la Colombie-Britannique. L'objectif de ces échantillonnages est d'établir des indices d'abondance, indépendants de la pêche, de toutes les espèces de poissons démersaux capturables au chalut de fond et de recueillir des données biologiques sur les espèces sélectionnées.

Des 236 traits de chalut réalisés, 226 ont été fructueux. La prise moyenne par trait réussi pesait 426 kg. Quelque 20 espèces différentes de poissons et d'invertébrés ont été prises en moyenne à chaque trait. La plie à grande bouche a été l'espèce la plus abondante; venaient ensuite la chimère d'Amérique et l'aiguillat commun. Des données biologiques (longueur, poids, sexe, stade de maturité et structure d'âge) ont été recueillies pour 55 espèces de poisson. Des données océanographiques et des données sur la géométrie du chalut (température de l'eau, profondeur, hauteur de la ralingue supérieure et écartement des panneaux) ont également été recueillies pour la plupart des traits.

INTRODUCTION

In 2003 a report by the Pacific Scientific Advice Review Committee (PSARC) recommended development of fishery-independent relative abundance indices using bottom trawl surveys in British Columbia waters (Sinclair et al., 2003). As an initial step, it recommended that a pilot survey be conducted in PMFC major areas 5A and 5B (Queen Charlotte Sound). This region was recommended in part because it is not covered by other bottom trawl surveys and it represents a significant portion of the commercial bottom trawl fishery.

The first Queen Charlotte Sound survey was successfully completed in the summer of 2003 (Olsen et al., 2007). Following that, additional surveys were planned for the west coast of Vancouver Island beginning in 2004, Hecate Strait beginning in 2005, and the west coast of the Queen Charlotte Islands beginning in 2006. These surveys are to be conducted on a rotating biennial schedule with the Queen Charlotte Sound and Hecate Strait surveys conducted in odd-numbered years and the west coast Vancouver Island and west coast Queen Charlotte Islands surveys conducted in even-numbered years. Together they provide comprehensive coverage of the continental shelf and upper slope of the British Columbia Coast (Figure 1).

This document provides a brief synopsis of the 2005 Hecate Strait groundfish bottom trawl survey, including the methods used and data collected. It is not intended as a comprehensive review of the survey, nor does it provide interpretive analysis of the survey results.

METHODS

VESSEL AND FISHING GEAR

The survey was conducted aboard the chartered commercial stern trawler F/V Frosti (Figure 2). The trawl net used was an Atlantic Western IIA box trawl (Table 1) connected to 1000 kg Thyboron 104 doors with 11 m door legs.

STAFF SUMMARY

A total of 16 personnel were involved in the survey, which was split into three sections, each between 8 and 13 days duration, with 7 staff in each. All staff were funded by Fisheries and Oceans Canada (DFO) (Table 2).

SURVEY DESIGN

The study area consists of Hecate Strait, from approximately latitude 52° 40' N to latitude 54° 40' N and westward into Dixon Entrance to approximately longitude 133° 00' W, covering depths from 10 to 500 meters (Figure 3), and categorized into four distinct strata (Table 3). The southern region of this survey is nearly contiguous with the most northerly extent of the Queen Charlotte Sound survey.

While surveys have been conducted in Hecate Strait for over 20 years, the design of this survey was modified to be consistent with other groundfish surveys on Canada's west coast. The design was updated from a depth stratified systematic design to a random depth stratified design and the survey trawl was changed from a Yankee 36 to an Atlantic Western II.

We divided the survey area into a contiguous grid of 4 km^2 blocks and from these blocks we randomly selected 220 primary fishing locations and 30 additional fishing locations to be used as alternates in the event that not all primary locations were fishable. The number of locations and the allocation of locations across strata were based on an analysis by Sinclair et al. (2003) and were intended to minimize observational error for the most important commercial groundfish species. (Table 3, Figure 4).

OPERATIONS

Fishing

Fishing normally commenced at sunrise and ended at sunset each day. This yielded a fishing day length of about 14 hours, starting at approximately six in the morning and ending at about eight in the evening.

We frequently began fishing immediately on arrival at a fishing location. However, if the captain was not familiar with an area we would spend a few minutes traversing the block and examining the depth sounder profile to determine if it was suitable for trawling. If it was not, we designated the location as "rejected", removed it from the sampling frame and moved on to the next location.

When trawling, the captain would attempt to tow through the center of the 4 km^2 fishing block, usually following a depth contour. However, where the bottom topography

made this difficult or impossible, the captain would trawl wherever he felt he could obtain a successful result, with the stipulation that at least half of the total trawl track had to be within the block.

The ratio of warp length to depth ("scope") was not kept constant and was left to the discretion of the captain. It normally varied from about three for shallow tows to around two for deeper tows (Table 4, Figure 5).

To determine the start of each tow, we monitored the real-time net sensor data to establish when the net reached the sea floor and the headrope collapsed to a height of about two to four meters, at which point we considered the net to be actively fishing. The target on-bottom time was 20 minutes. However, for pragmatic reasons we accepted tows with on-bottom times of at least 75% of the target time. This allowed us to retain some tows that would otherwise have been failures due to hang-ups or early haul-backs.

The result of trawling was either a successful tow, or a hang-up or tear-up of the trawl net. In the event of a hang-up or tear-up, we would either designate the location as "aborted", or try to trawl again in a different part of the block.

Any locations that were rejected or aborted were deemed unsuitable for trawling and we permanently removed them from the sampling frame for all future surveys. Thus, we expect that the total number of available fishing locations will gradually diminish over the duration of the survey series. This practice should lead to more efficient and cost-effective surveys in the future, as untrawlable regions are gradually identified and removed.

Gear and Oceanographic Sensors

The trawl net was equipped with a variety of real-time sensors including depth, doorspread, current velocity, and headrope height. These sensors transmitted data to a bridge computer once per second and allowed us to continually monitor the net during fishing. In addition to these real-time sensors, we also attached data-logging probes to collect water temperature and net depth (Seabird 39 probe) and contact of the trawl net with the sea floor (NMFS Bottom Contact Sensor).

Catch Processing

Codend contents were dumped into a raised rectangular sorting bin approximately three meters long by two meters wide. Any catch that did not fit into the sorting bin was dumped onto the trawl deck next to the sorting bin. We completely sorted and weighed the catch to species for all sets.

Biological Sampling

While the primary purpose of the survey was to generate fishery-independent indices of relative abundance, our second goal was to collect associated biological information on the size, sex, and age composition of selected species. In particular, our biological sampling priorities were to collect length and sex frequencies on all species in the catch of each tow (subject to a minimum number of specimens criteria), to collect representative samples of specimen length and weight, and to collect age samples for selected species.

We selected age samples from the dominant catch by weight in each tow, as well as certain species deemed high priority due to concerns over stock status. Otoliths were collected from rockfish and flatfish.

RESULTS

FISHING

We divided the survey into three sections of 8 to 13 days which allowed for rotation of the science crews. The survey began and ended at the Pacific Biological Station in Nanaimo, while the mid-survey crew changes were performed in Prince Rupert and Port Hardy.

From a total of 35 survey days, 5 days in total were required for travel at the start and end of the survey and 2 days were required changing crews. Thus, we ended with a total of 28 full fishing days in which time we conducted 236 tows, of which 226 were successful and 10 were unsuccessful due to hang-ups or tear-ups. This resulted in an average of just over 8 successful tows per fishing day, or about 7 successful tows per survey day (Table 5).

The final status of the 2005 sampling frame includes 226 successfully fished locations, 39 locations rejected prior to fishing based on either captain's knowledge or on-ground inspection, and 10 locations rejected after one or more failed fishing attempts (Figure 6).

CATCH

Catch weight per tow was typically less than 2,000 kg, averaging 426 kg, and we observed an average of 20 species per tow (Figure 7 and Figure 8). We caught a total of 96,379 kg of fish and invertebrates. Most of this (93,412 kg) consisted of 113 different taxonomic groups of fish, including 26 rockfish taxa and 17 flatfish taxa. The remainder (2,967 kg) consisted of 116 invertebrate groups (Table 6). Of the fish species, arrowtooth flounder was the most dominant by weight, followed by spotted ratfish, spiny dogfish, and rex sole (Table 7).

SAMPLES AND SPECIMENS

We sampled 55 species of fish for attributes such as length, weight, sex, maturity, and age structure (Table 8, Table 9, and Table 10).

GEAR AND OCEANOGRAPHIC SENSORS

We collected Seabird 39 data (water temperature and depth) from 231 tows (Table 11, Figure 9). Although we have not yet analyzed these data in detail, they may prove useful for explaining, or at least correlate to, abundance trends. They will also be added to a growing database of oceanographic data housed at the Institute of Ocean Sciences, British Columbia, and made available to other researchers.

We collected bottom contact data from the NMFS Bottom Contact Sensor for 236 tows (Table 11). These data provide a record of the trawl net contact with the sea floor

and thus are useful not only for determining the quality and duration of the sea floor contact, but also indicate the relative rugosity of the sea floor (Figure 10).

Net sensor data, including doorspread, current velocity, and headrope height were collected from most tows but were unavailable from several tows due to equipment failure (Table 11, Figure 11).

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Table 1. Net specifications.

Part	Standard Length	Material	Metric Length	Units	Material
Rigging					
Sweep Line	90	7/8 cable	27.4	m	22 mm cable
Upper bridle	90	3/4 cable	27.4	m	19 mm cable
Lower bridle	90	7/8 cable	27.4	m	22 mm cable
Door Legs	36	7/8 cable	11	m	22 mm cable
Pickups	42	7/8 cable	12.8	m	22 mm cable
Hook ups	8.8 t	BMMDV80	8 mt	mt	BMMDV80
Net frame					
Headline	74.5	7/16" Long link chain	22.7	m	11mm Long link chain
Headline floats	90	8" plastic Spheres			200 mm plastic spheres
Riblines		1 1/4 " Polysteel rope			32 mm polysteel rope
Bolsch Line	68.33	1" poly steel rope	20.8	m	25 mm polysteel rope
Fishing Line	107.33	7/16" Long link chain	32.7	m	11mm Long link chain
Foot Rope					
Foot Rope	107.33	5/8 Chain	32.7	m	16 mm chain
Foot rope bosom	14	16 in Tire gear with 2 in Spacing	4.3	m	400 mm tire gear with 50 mm spacing
Root rope wing1	18.33	18" rock hopper, 18 " disks spaced 18 " apart	5.6	m	450 mm rock hopper 450 mm spacing
Root rope wing2	8.83	18" rock hopper, 18 " disks spaced 18 " apart	2.7	m	450 mm rock hopper 450 mm spacing
Web					
Belly	5"	3.5 mm Euroline	127	mm	3.5 mm Euroline
Square	5"	3.5 mm Euroline	127	mm	3.5 mm Euroline
Side Panel	5"	3.5 mm Euroline	127	mm	3.5 mm Euroline
Taper	4.5"	3.5 mm Euroline	114	mm	3.5 mm Euroline
Intermediate	4.5"	3.5 mm Euroline	114	mm	3.5 mm Euroline
Codend	4.5"	3.5 mm Euroline	114	mm	3.5 mm Euroline
Guard Mesh	4.5 or 5 "	Double 4.5 mm Euroline	114 or 127	mm	Double 4.5 mm Euroline
Liner	3/4"	Notless Nylon	19	mm	Notless Nylon

Table 2. Survey science personnel.

Schon Acheson
Kristina Anderson
Ed Choromanski
Karina Cooke
Linnea Flostrand
Anna Gerrard
Charlotte Jordon
Rob Kronlund
Norm Olsen
Kate Rutherford
Alan Sinclair
Tom Therriault
Matt Thompson
Nev Venables
Greg Workman
Malcolm Wyeth

Table 3. Definition of survey strata with the target and delivered tow allocation in each.

Depth Stratum				Area	Target	Successful
Meters		Fathoms		(km2)	Tows	Tows
20 -	70	11 -	38	6,516	86	83
70 -	130	38 -	71	3,288	96	91
130 -	220	71 -	120	3,200	38	32
220 -	500	120 -	273	3,248	30	20
					250	**226**

Table 4. Mean warp length and scope by 50 m depth interval.

Depth (m)		Mean Warp (m)	Mean Warp (fa)	Mean Scope	Mean Depth (fa)
50 -	100	229	125	3.1	41
100 -	150	359	197	3.0	65
150 -	200	492	269	2.9	92
200 -	250	611	334	2.8	119
250 -	300	671	367	2.5	145
300 -	350	762	417	2.4	174
350 -	400	880	481	2.4	200
400 -	450	960	525	2.3	227

Table 5. Summary of survey operations.

Start: Depart PBS	May 25
End: Offload PBS	June 29
Fishing days	28
Travel days	5
Crew change days	2
Total days	35
Total tows	236
Usable tows	226
Unusable tows	10
Inspected un-fished blocks	39
Average tows per day	6.7
Average usable tows per day	6.5
Average usable tows per fishing day	8.1
Average catch per usable tow	426
Average species per usable tow	20

Table 6. Catch broken down by species groups.

Species Category	Number of Taxa	Weight (kg)
All fish	113	93,412
Rockfish	26	6,382
Flatfish	17	53,677
Roundfish	8	14,413
Cartilaginous fish	7	18,495
Other fish	55	446
Invertebrates	116	2,967

Table 7. All captured species, ordered by total catch weight, showing number of tows in which the species occurred, total catch weight, maximum and mean per-tow catch weight, and relative abundance and relative error from bootstrapped area expanded estimates.

Species	Number of Tows	Catch Weight (kg) Total	Maximum	Mean	Relative Abundance	Relative Error
Arrowtooth flounder	166	25,491.1	1,182.3	158.3	8.261	0.23
Spotted ratfish	217	9,549.2	930.2	44.6	1.238	0.26
Spiny dogfish	156	7,033.6	1,655.9	45.1	16.087	0.38
Rex sole	153	6,569.3	415.3	43.5	2.136	0.11
English sole	168	5,778.1	596.6	34.6	1.796	0.26
Dover sole	135	4,559.7	309.9	34.0	2.983	0.14
Walleye pollock	132	4,153.4	1,622.5	33.8	0.670	0.70
Pacific cod	179	3,635.9	489.1	20.3	1.162	0.19
Pacific halibut	138	3,410.8	162.4	24.7	0.976	0.35
Southern rock sole	114	3,243.3	316.7	28.4	0.397	0.24
Sablefish	85	2,969.6	555.7	35.4	3.936	0.29
Yellowtail rockfish	32	2,466.8	1,754.6	88.1	0.738	0.23
Pacific hake	78	1,718.1	358.6	22.0	2.782	0.31
Flathead sole	89	1,699.2	337.4	20.0	0.414	0.36
Big skate	47	1,430.7	428.4	31.8	0.327	0.34
Pacific tomcod	82	1,412.9	319.0	18.8	0.001	0.45
Pacific sanddab	72	1,410.9	373.0	21.4	1.156	0.25
Jellyfish	139	1,334.3	155.2	11.0	-	-
Sand sole	53	773.8	120.1	14.6	0.006	0.58
Silvergray rockfish	57	770.3	138.3	13.8	0.598	0.37
Redbanded rockfish	42	703.4	71.7	16.7	0.244	0.33
Pacific ocean perch	65	630.2	103.4	10.0	4.673	0.34
Primnoa	12	500.0	196.4	41.7	-	-
Shortspine thornyhead	32	442.9	57.6	14.8	0.339	0.18
Lingcod	70	432.3	74.1	6.2	2.474	0.49
Petrale sole	98	426.8	25.5	4.4	0.393	0.30
Longnose skate	49	420.4	70.4	8.6	0.693	0.16
Quillback rockfish	49	414.7	51.1	8.6	0.073	0.48
Rougheye rockfish	28	268.1	92.3	10.7	0.271	0.45
Redstripe rockfish	15	254.0	96.3	18.1	0.836	0.54
Dungeness crab	36	250.2	33.3	7.4	-	-
Pacific herring	112	243.4	41.2	2.6	0.008	0.32
Glass sponges	16	236.1	174.5	15.7	-	-
Copper rockfish	16	165.8	116.1	10.4	0.001	0.95
Butter sole	35	117.2	31.6	4.0	-	-
Eulachon	54	106.9	32.8	2.7	0.910	0.93
Schoolmaster gonate squid	19	90.7	18.9	4.8	-	-
Sunflower starfish	44	86.0	10.6	2.1	-	-
Starry flounder	11	85.6	47.7	7.8	0.003	0.99
Pink shrimp (smooth)	52	80.2	5.8	2.0	-	-
Curlfin sole	53	68.3	5.5	1.3	0.071	0.35
Anemone	24	64.3	24.0	3.6	-	-
Shortraker rockfish	4	64.0	28.0	16.0	0.062	0.39
Sandpaper skate	22	59.8	16.5	2.8	0.013	0.38

Table 7. Continued

Species	Number of Tows	Catch Weight (kg) Total	Maximum	Mean	Relative Abundance	Relative Error
Kelp greenling	25	59.5	9.3	2.4	0.021	0.64
Fragile urchin	54	55.1	19.4	1.5	-	-
Yelloweye rockfish	11	53.8	7.5	4.9	0.274	0.43
Bocaccio	10	49.3	10.7	4.9	0.341	0.67
Acorn barnacle	2	40.9	39.9	20.5	-	-
Metridium	21	40.1	20.2	2.4	-	-
Slender sole	60	39.2	5.1	0.8	0.223	0.17
Canary rockfish	15	37.1	13.0	2.7	0.802	0.30
Pink short-spined star	35	34.1	8.4	1.1	-	-
Wolf eel	5	30.8	9.9	6.2	0.020	0.56
Pacific sand lance	38	17.9	11.5	1.6	0.000	1.00
Giant red sea cucumber	13	17.6	3.7	1.4	-	-
Greenstriped rockfish	16	17.4	3.5	1.1	0.277	0.32
Giant pacific octopus	1	16.4	16.4	16.4	-	-
Opalescent inshore squid	37	15.5	3.0	0.7	-	-
Sharpchin rockfish	15	15.3	5.5	2.2	0.435	0.32
Widow rockfish	5	10.9	6.7	2.2	0.000	0.96
Sidestripe shrimp	44	10.8	2.2	0.4	-	-
Sponges	16	10.3	2.6	0.9	-	-
Mud star	17	10.3	1.8	0.9	-	-
Chinook salmon	6	9.8	4.3	1.6	0.020	0.57
Darkblotched rockfish	4	8.6	4.4	2.2	0.101	0.57
Shiner perch	22	7.7	2.6	0.6	0.001	0.63
Bigmouth sculpin	2	7.2	5.6	3.6	-	-
Bath sponges	6	7.0	7.0	2.3	-	-
Chum salmon	1	6.9	6.9	6.9	-	-
Arminidae	34	6.1	1.6	0.7	-	-
Pacific staghorn sculpin	6	6.0	2.3	1.0	-	-
Harlequin rockfish	7	5.7	4.0	1.0	-	-
Buffalo sculpin	12	5.6	1.2	0.7	-	-
Sand star	14	5.2	1.4	0.7	-	-
Sea pen	20	5.2	1.4	0.6	-	-
Blackbelly eelpout	25	5.1	1.3	0.4	0.008	0.34
Leather star	8	4.4	2.2	0.6	-	-
Wattled eelpout	6	4.3	1.6	0.7	-	-
Tube worms	2	4.1	3.9	2.1	-	-
Snake prickleback	41	4.1	1.0	0.3	0.000	1.01
Sturgeon poacher	61	4.0	0.4	0.2	0.000	0.96
Golden king crab	2	3.6	2.5	1.8	-	-
Dwarf wrymouth	1	3.6	3.6	3.6	-	-
Assimineidae	1	3.2	3.2	3.2	-	-
Great sculpin	4	3.0	1.5	1.0	-	-
Giant barnacle	4	2.9	2.3	1.0	-	-
Salps	6	2.9	2.0	1.0	-	-
Prawn	14	2.8	0.8	0.3	-	-

Table 7. Continued

Species	Number of Tows	Catch Weight (kg) Total	Maximum	Mean	Relative Abundance	Relative Error
Red urchin	3	2.8	1.5	0.9	-	-
Deepsea sole	1	2.7	2.7	2.7	-	-
Roughback sculpin	33	2.5	0.6	0.2	-	-
Spiny scallop	9	2.3	2.3	1.1	-	-
Heart urchins	9	2.2	1.2	0.6	-	-
Basket stars	12	2.0	0.8	0.3	-	-
Red irish lord	5	2.0	1.7	1.0	-	-
Cymatiidae	1	1.9	1.9	1.9	-	-
Pink scallop, (aka reddish scallc	8	1.8	1.6	0.5	-	-
Blackfin sculpin	12	1.6	0.6	0.3	-	-
Fish-eating star	7	1.3	0.4	0.3	-	-
Brown box crab	1	1.2	1.2	1.2	-	-
Sea whip	9	1.1	0.6	0.3	-	-
Brown cat shark	1	1.1	1.1	1.1	0.008	0.45
Speckled sanddab	18	1.0	0.2	0.1	-	-
Oregontriton	16	0.9	0.2	0.1	-	-
Prowfish	1	0.8	0.8	0.8	-	-
Starfish	3	0.8	0.7	0.4	-	-
Rosy tritonia	5	0.8	0.8	0.4	-	-
Mussels	1	0.8	0.8	0.8	-	-
Splitnose rockfish	6	0.8	0.4	0.4	0.695	0.60
Puget sound rockfish	2	0.7	0.6	0.4	0.003	0.70
Spiny red sea star	3	0.7	0.4	0.3	-	-
Morning sun starfish	2	0.7	0.7	0.7	-	-
Shortbelly rockfish	1	0.7	0.7	0.7	-	-
Threadfin sculpin	3	0.7	0.4	0.3	0.024	0.37
Weathervane scallop	1	0.6	0.6	0.6	-	-
Blacktail snailfish	1	0.6	0.6	0.6	0.000	0.90
C-o sole	2	0.5	0.4	0.3	-	-
Pacific sandfish	5	0.5	0.2	0.1	-	-
Sea cucumber	2	0.5	0.3	0.2	-	-
Hippasteria	3	0.5	0.5	0.5	-	-
Paguroidea	9	0.5	0.4	0.2	-	-
Pygmy rockfish	5	0.4	0.4	0.2	0.003	0.59
Whitespotted sea cucumber	1	0.4	0.4	0.4	-	-
Spinyhead sculpin	1	0.4	0.4	0.4	-	-
Seahares	1	0.4	0.4	0.4	-	-
Black rockfish	1	0.3	0.3	0.3	-	-
Anthozoa	1	0.3	0.3	0.3	-	-
Sandfishes	2	0.3	0.2	0.2	-	-
Purple starfish	1	0.3	0.3	0.3	-	-
China rockfish	1	0.3	0.3	0.3	-	-
Sea urchins	9	0.2	0.1	0.1	-	-
Hydroid	3	0.2	0.2	0.1	-	-

Table 7. Continued

Species	Number of Tows	Catch Weight (kg) Total	Maximum	Mean	Relative Abundance	Relative Error
Red rock crab	7	0.2	0.1	0.1	-	-
Bigfin eelpout	2	0.2	0.2	0.2	0.007	0.39
Brown irish lord	3	0.2	0.2	0.2	-	-
Bristly crab	1	0.1	0.1	0.1	-	-
Cushion star	8	0.1	0.1	0.1	-	-
Ascidians and tunicates	8	0.1	0.1	0.1	-	-
Rockfishes	1	0.1	0.1	0.1	-	-
Graceful decorator crab	2	0.1	0.1	0.1	-	-
Furrowed rock crab	16	0.1	0.1	0.1	-	-
Long-armed sea star	6	0.1	0.1	0.1	-	-
Solasteridae	2	0.1	0.1	0.1	-	-
Black eelpout	4	0.1	0.1	0.1	0.009	0.56
Pearly prickleback	2	0.1	0.1	0.1	-	-
Pseudarchaster alascensis	1	0.1	0.1	0.1	-	-
Vermillion starfish	9	0.1	0.1	0.1	-	-
Pallid urchin	1	0.1	0.1	0.1	-	-
Crustaceans	1	0.1	0.1	0.1	-	-
Ribbed sculpin	9	0.1	0.0	0.0	-	-
Northern ronquil	8	0.0	0.0	0.0	0.000	0.97
Coonstripe shrimp	2	0.0	0.0	0.0	-	-
Shortfin eelpout	14	0.0	0.0	0.0	-	-
Pygmy poacher	1	0.0	0.0	0.0	-	-
Ophiuridae	4	0.0	0.0	0.0	-	-
Rock snails	1	0.0	0.0	0.0	-	-
Ophiuroidea	5	-	-	-	-	-
Henricia	10	-	-	-	-	-
Northern spearnose poacher	3	-	-	-	-	-
Snailfishes	2	-	-	-	-	-
Pacific bobtail squid	22	-	-	-	-	-
Pallid slipskin	1	-	-	-	-	-
Redclaw crab	2	-	-	-	-	-
Porcelain crabs	1	-	-	-	-	-
Striped sun starfish	1	-	-	-	-	-
Yoldias	1	-	-	-	-	-
Seaslugs	6	-	-	-	-	-
Slim sculpin	8	-	-	-	-	-
Tadpole sculpin	2	-	-	-	-	-
Lewismoon snail	1	-	-	-	-	-
Spike shrimp (horned shrimp)	5	-	-	-	-	-
Blue-eyed searcher	1	-	-	-	-	-
Shortjaw eelpout	2	-	-	-	-	-
Common argid	2	-	-	-	-	-
Smooth alligatorfish	1	-	-	-	-	-
Pacific viperfish	1	-	-	-	-	-

Table 7. Continued

Species	Number of Tows	Catch Weight (kg) Total	Maximum	Mean	Relative Abundance	Relative Error
Graceful rock crab	2	-	-	-	-	-
Chitons	1	-	-	-	-	-
Rose starfish	14	-	-	-	-	-
Sea mouse	2	-	-	-	-	-
Glass shrimp	1	-	-	-	-	-
Flatspine triangle crab	1	-	-	-	-	-
Dusky sculpin	1	-	-	-	-	-
Polychaete worms	3	-	-	-	-	-
Pacific sleeper shark	1	-	-	-	-	-
Stony corals	1	-	-	-	-	-
Barnacles	1	-	-	-	-	-
Sand dollars	1	-	-	-	-	-
Cardiidae	1	-	-	-	-	-
Northern crangon	13	-	-	-	-	-
Northern clingfish	1	-	-	-	-	-
Roughspine sculpin	1	-	-	-	-	-
Grunt sculpin	1	-	-	-	-	-
Lanternfishes	3	-	-	-	-	-
Pacific spiny lumpsucker	1	-	-	-	-	-
Crescent gunnel	1	-	-	-	-	-
Shrimp	2	-	-	-	-	-
Peanutworms	1	-	-	-	-	-
Bluespotted poacher	9	-	-	-	-	-
Sea lilies and feather stars	2	-	-	-	-	-
Isopods	1	-	-	-	-	-
Green false-jingle	1	-	-	-	-	-
Daubed shanny	2	-	-	-	-	-
Cirroteuthidae	1	-	-	-	-	-
Hippasteria californica	1	-	-	-	-	-
Oregoniinae	23	-	-	-	-	-
Dorididae	1	-	-	-	-	-
Poachers	2	-	-	-	-	-
Lampshells	5	-	-	-	-	-
Blue mussel	1	-	-	-	-	-
Euphausiids	1	-	-	-	-	-
Ommastrephidae	1	-	-	-	-	-
Gastropods	2	-	-	-	-	-
Pygmy rock crab	3	-	-	-	-	-
Sand lances	2	-	-	-	-	-
Red gunnel	1	-	-	-	-	-
Sand sea cucumber	1	-	-	-	-	-
Humpback shrimp	1	-	-	-	-	-
Vermilion rockfish	1	-	-	-	-	-
Caprelidea	1	-	-	-	-	-
Ctenophora	3	-	-	-	-	-
Pandalid shrimp	1	-	-	-	-	-
Fourhorn poacher	1	-	-	-	-	-
Squids	1	-	-	-	-	-
Bryozoa	5	-	-	-	-	-
Neptuneidae	1	-	-	-	-	-
Mediaster	1	-	-	-	-	-
Warty poacher	1	-	-	-	-	-

Table 8. Number of samples and number of recorded biological attributes per species sampled.

Species	Samples	Length	Weight	Sex	Maturity	Age
Arrowtooth flounder	166	8,674	865	8,675	843	844
Big skate	45	220	16	219	0	0
Blackbelly eelpout	2	45	0	0	0	0
Bocaccio	10	14	14	14	14	14
Butter sole	15	441	2	441	0	0
C-o sole	1	1	1	1	0	0
Chinook salmon	4	5	5	5	0	0
Chum salmon	1	1	1	1	0	0
Copper rockfish	14	134	102	134	98	98
Curlfin sole	12	101	2	101	0	0
Darkblotched rockfish	2	6	0	6	0	0
Dover sole	132	3,960	679	3,957	653	654
English sole	169	8,816	936	8,817	924	924
Eulachon	14	1,423	0	0	0	0
Flathead sole	31	1,616	181	1,617	182	182
Harlequin rockfish	1	39	0	39	0	0
Kelp greenling	21	144	9	144	0	0
Lingcod	68	288	48	161	4	0
Longnose skate	47	82	31	82	0	0
Pacific cod	178	3,278	3,263	638	38	0
Pacific hake	10	576	0	576	0	0
Pacific halibut	134	601	41	12	1	0
Pacific herring	19	1,321	0	0	0	0
Pacific ocean perch	17	674	358	674	358	358
Pacific sand lance	5	586	0	0	0	0
Pacific sanddab	23	1,355	239	1,355	239	234
Pacific sleeper shark	1	1	0	0	0	0
Pacific tomcod	19	1,755	0	1,480	0	0
Petrale sole	100	515	349	515	204	185
Prowfish	1	1	1	0	0	0
Quillback rockfish	51	565	391	565	368	368
Red irish lord	1	2	0	0	0	0
Redbanded rockfish	41	380	89	380	79	79
Redstripe rockfish	8	373	203	373	203	203
Rex sole	80	6,103	504	6,108	509	509
Roughback sculpin	3	84	0	0	0	0
Rougheye rockfish	8	136	36	136	36	36
Sablefish	81	1,243	664	1,239	433	416
Sand sole	39	1,288	79	1,288	59	54
Sandpaper skate	21	27	17	27	0	0
Shiner perch	4	216	0	0	0	0
Shortraker rockfish	4	5	5	5	5	5
Shortspine thornyhead	10	808	0	808	0	0
Silvergray rockfish	15	271	157	270	147	148
Snake prickleback	6	129	0	12	0	0
Southern rock sole	111	5,050	694	5,053	480	478
Spiny dogfish	12	1,010	0	1,010	0	0
Spotted ratfish	67	5,992	697	5,992	0	0
Starry flounder	11	28	22	28	13	13
Sturgeon poacher	1	13	0	0	0	0
Walleye pollock	40	3,075	1	1,655	0	0
Widow rockfish	1	2	2	2	0	0
Wolf eel	5	6	4	0	0	0
Yelloweye rockfish	12	15	9	15	0	0
Yellowtail rockfish	13	424	258	424	257	257
Total	**1,907**	**63,918**	**10,975**	**55,054**	**6,147**	**6,059**

Table 9. Numbers of samples and specimens by sample type and species.

Species	Total		Len./Sex		Len./Sex/Wt.		Len./Sex/Wt./Age	
	N	n	N	n	N	n	N	n
Arrowtooth flounder	166	8,674	131	7,628	18	203	17	844
Big skate	45	220	29	199	15	20	0	0
Blackbelly eelpout	2	45	2	45	0	0	0	0
Bocaccio	10	14	0	0	0	0	10	14
Butter sole	15	441	13	411	2	30	0	0
C-o sole	1	1	0	0	1	1	0	0
Chinook salmon	4	5	0	0	4	5	0	0
Chum salmon	1	1	0	0	1	1	0	0
Copper rockfish	14	134	7	32	4	4	3	98
Curlfin sole	12	101	10	91	2	10	0	0
Darkblotched rockfish	2	6	2	6	0	0	0	0
Dover sole	132	3,960	94	3,216	22	88	14	654
English sole	169	8,816	139	7,787	15	108	15	924
Eulachon	14	1,423	14	1,423	0	0	0	0
Flathead sole	31	1,616	28	1,435	0	0	3	182
Harlequin rockfish	1	39	1	39	0	0	0	0
Kelp greenling	21	144	12	124	9	20	0	0
Lingcod	68	288	26	231	27	42	0	0
Longnose skate	47	82	17	51	30	31	0	0
Pacific cod	178	3,278	0	0	72	1,394	0	0
Pacific hake	10	576	10	576	0	0	0	0
Pacific halibut	134	601	93	552	7	16	0	0
Pacific herring	19	1,321	19	1,321	0	0	0	0
Pacific ocean perch	17	674	10	316	0	0	7	358
Pacific sand lance	5	586	5	586	0	0	0	0
Pacific sanddab	23	1,355	18	1,116	1	5	4	234
Pacific sleeper shark	1	1	1	1	0	0	0	0
Pacific tomcod	19	1,755	19	1,755	0	0	0	0
Petrale sole	100	515	24	139	63	191	13	185
Prowfish	1	1	0	0	0	0	0	0
Quillback rockfish	51	565	19	151	20	46	12	368
Red irish lord	1	2	1	2	0	0	0	0
Redbanded rockfish	41	380	29	277	9	24	3	79
Redstripe rockfish	8	373	4	170	0	0	4	203
Rex sole	80	6,103	72	5,599	0	0	8	509
Roughback sculpin	3	84	3	84	0	0	0	0
Rougheye rockfish	8	136	7	100	0	0	1	36
Sablefish	81	1,243	25	559	46	264	8	416
Sand sole	39	1,288	32	1,189	6	45	1	54
Sandpaper skate	21	27	4	10	17	17	0	0
Shiner perch	4	216	4	216	0	0	0	0
Shortraker rockfish	4	5	0	0	0	0	4	5
Shortspine thornyhead	10	808	10	808	0	0	0	0
Silvergray rockfish	15	271	9	114	1	9	5	148
Snake prickleback	6	129	6	129	0	0	0	0
Southern rock sole	111	5,050	80	4,349	21	226	9	478
Spiny dogfish	12	1,010	12	1,010	0	0	0	0
Spotted ratfish	67	5,992	60	5,295	7	697	0	0
Starry flounder	11	28	3	6	7	9	1	13
Sturgeon poacher	1	13	1	13	0	0	0	0
Walleye pollock	40	3,075	39	3,074	1	1	0	0
Widow rockfish	1	2	0	0	1	2	0	0
Wolf eel	5	6	1	2	0	0	0	0
Yelloweye rockfish	12	15	3	6	9	9	0	0
Yellowtail rockfish	13	424	7	157	1	10	5	257
Total	**1,907**	**63,918**	**1,155**	**52,400**	**439**	**3,528**	**147**	**6,059**

Table 10. Statistics of individual length and weight, and sex proportion by species.

Species	Length (cm)			Weight (kg)			Sex Proportion	
	Min.	Max.	Mean	Min.	Max.	Mean	Male	Female
Arrowtooth flounder	9	77	40	0.00	3.27	0.85	0.39	0.61
Big skate	41	195	87	1.43	40.00	14.93	0.60	0.39
Blackbelly eelpout	10	21	14	-	-	-	-	-
Bocaccio	23	76	62	0.13	5.61	3.47	0.71	0.29
Butter sole	17	39	28	0.34	0.34	0.34	0.45	0.55
C-o sole	29	29	29	-	-	-	0.00	1.00
Chinook salmon	33	50	41	0.47	1.78	1.04	0.80	0.20
Chum salmon	79	79	79	6.93	6.93	6.93	0.00	1.00
Copper rockfish	10	45	34	0.18	1.54	0.84	0.57	0.43
Curlfin sole	18	44	28	-	-	-	0.55	0.45
Darkblotched rockfish	32	52	39	-	-	-	0.17	0.83
Dover sole	17	61	36	0.08	2.40	0.56	0.52	0.48
English sole	3	50	29	0.01	1.31	0.27	0.37	0.63
Eulachon	8	21	15	-	-	-	-	-
Flathead sole	15	45	32	0.10	0.63	0.28	0.40	0.60
Harlequin rockfish	16	22	19	-	-	-	0.49	0.51
Kelp greenling	18	41	31	0.04	0.61	0.32	0.26	0.74
Lingcod	20	111	45	0.13	11.92	2.83	-	-
Longnose skate	33	138	86	0.89	10.51	4.03	0.44	0.56
Pacific cod	4	93	37	0.00	8.72	0.90	-	-
Pacific hake	42	71	51	-	-	-	0.34	0.66
Pacific halibut	20	164	72	1.23	38.26	6.69	-	-
Pacific herring	9	27	17	-	-	-	-	-
Pacific ocean perch	14	54	28	0.03	2.45	0.42	0.52	0.48
Pacific sand lance	9	145	48	-	-	-	-	-
Pacific sanddab	11	35	24	0.01	0.50	0.25	0.53	0.47
Pacific sleeper shark	246	246	246	-	-	-	0.00	0.00
Pacific tomcod	12	30	18	-	-	-	-	-
Petrale sole	17	60	40	0.04	2.78	0.90	0.39	0.61
Prowfish	42	42	42	0.84	0.84	0.84	-	-
Quillback rockfish	8	47	32	0.01	3.11	0.72	0.54	0.46
Red irish lord	32	35	34	-	-	-	-	-
Redbanded rockfish	24	62	46	0.23	4.94	1.75	0.60	0.40
Redstripe rockfish	7	43	26	0.08	1.34	0.41	0.56	0.44
Rex sole	15	52	31	0.04	0.53	0.17	0.49	0.51
Roughback sculpin	8	19	11	-	-	-	-	-
Rougheye rockfish	14	64	43	0.85	4.69	2.58	0.48	0.52
Sablefish	27	101	49	0.23	9.09	1.63	0.56	0.44
Sand sole	10	50	33	0.08	1.12	0.58	0.34	0.66
Sandpaper skate	14	121	64	0.15	6.36	1.76	0.56	0.44
Shiner perch	9	15	13	-	-	-	-	-
Shortraker rockfish	67	104	89	4.79	19.45	12.84	0.80	0.20
Shortspine thornyhead	7	52	29	-	-	-	0.56	0.44
Silvergray rockfish	15	67	51	0.05	3.58	1.77	0.79	0.21
Snake prickleback	11	39	24	-	-	-	-	-
Southern rock sole	6	52	28	0.02	1.75	0.40	0.42	0.58
Spiny dogfish	43	121	72	-	-	-	0.31	0.69
Spotted ratfish	9	63	33	0.01	1.31	0.32	0.52	0.48
Starry flounder	34	71	60	0.48	5.23	3.11	0.07	0.93
Sturgeon poacher	13	20	18	-	-	-	-	-
Walleye pollock	14	70	27	0.43	0.43	0.43	-	-
Widow rockfish	36	37	37	0.80	0.80	0.80	0.50	0.50
Wolf eel	141	164	153	4.04	6.24	5.22	-	-
Yelloweye rockfish	44	65	56	1.88	5.56	3.94	0.20	0.80
Yellowtail rockfish	10	58	40	0.01	3.41	1.14	0.59	0.41

Table 11. Data collected from net sensors, showing the number of tows from which each data type was collected.

Sensor	Attribute	Number of Tows	Number of Records
NMFS Bottom Contact Sensor	Bottom contact sensor tilt angle	236	74,605
GPS	Vessel position - latitude and longitude	231	1,309
Scanmar Scanbas SRU 06 / SGM 15	Bottom depth	220	247,755
	Cross-current water velocity at net depth	229	278,973
	Trawl net doorspread	229	240,758
	Trawl net footrope to headline distance (opening)	230	306,897
	Trawl net headrope to bottom distance	230	298,206
	Water velocity at net depth	229	278,973
Seabird SBE39 Temperature/Depth Sensor	Net depth	231	159,320
	Water temperature at net depth	231	159,320

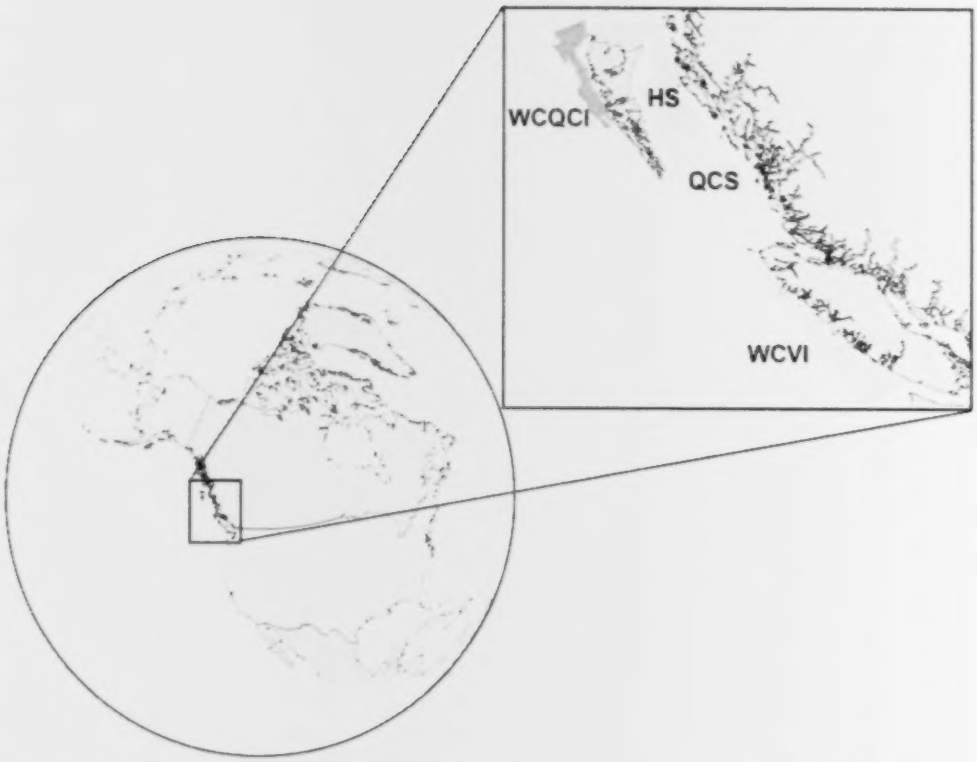

Figure 1. Locations of the modern groundfish trawl surveys on the coast of British Columbia, Canada. HS = Hecate Strait; WCQCI = west coast of Queen Charlotte Islands; QCS = Queen Charlotte Sound; WCVI = west coast of Vancouver Island.

Figure 2. The commercial stern trawler F/V Frosti.

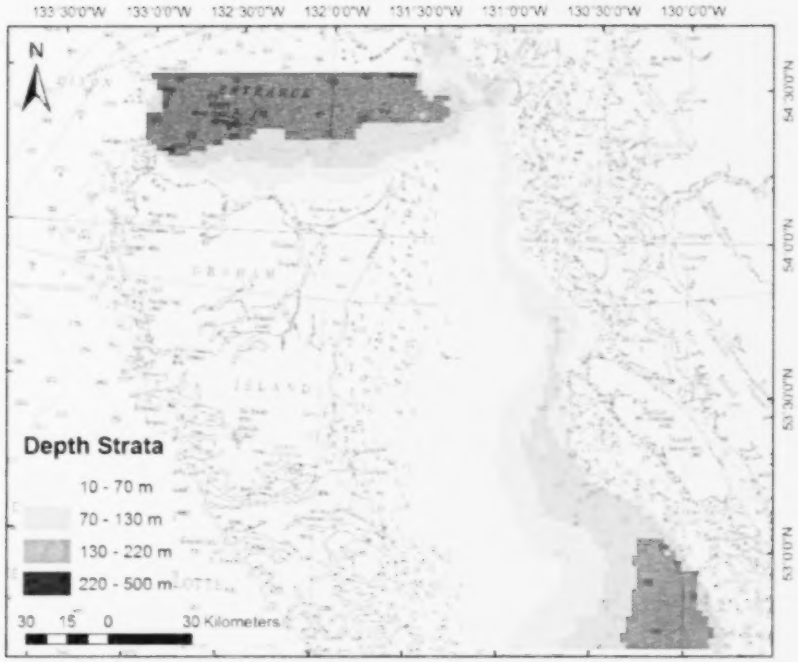

Figure 3. Queen Charlotte Islands study area showing the depth strata covered by the survey.

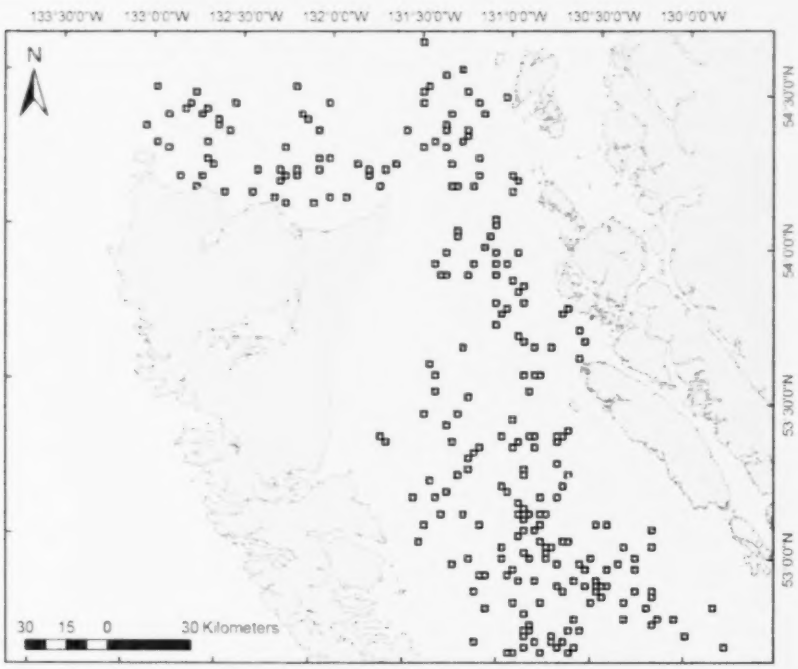

Figure 4. Initial status of the sampling frame showing the 250 randomly selected fishing locations.

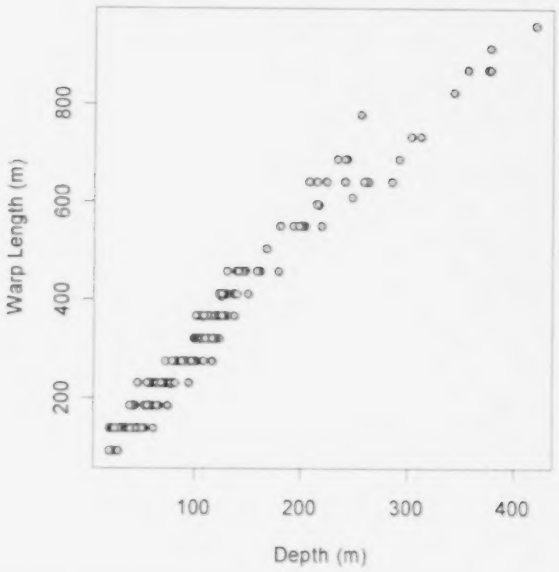

Figure 5. Warp length versus starting depth.

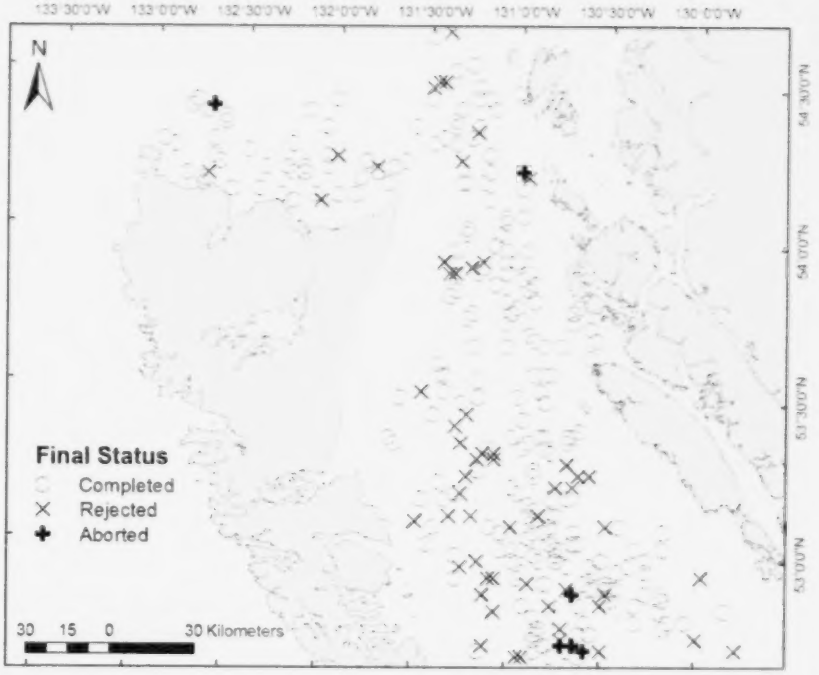

Figure 6. Final status of the sampling frame showing locations that were fished successfully (completed), rejected prior to fishing (rejected), or abandoned after one or more unsuccessful fishing attempts (aborted).

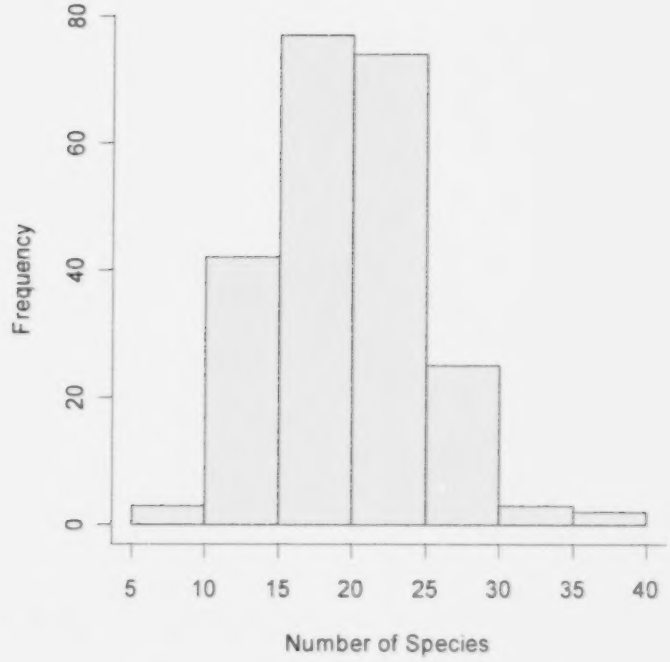

Figure 7. Histogram of number of species caught per tow.

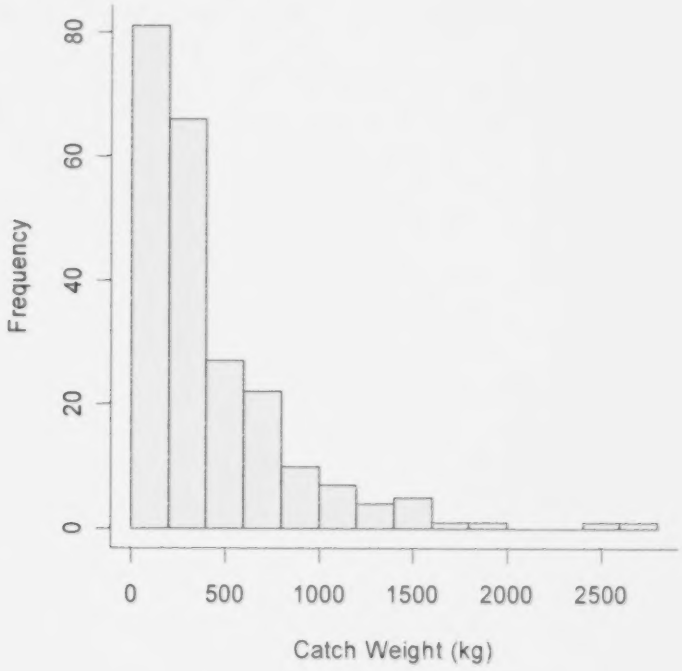

Figure 8. Histogram of catch weight per tow.

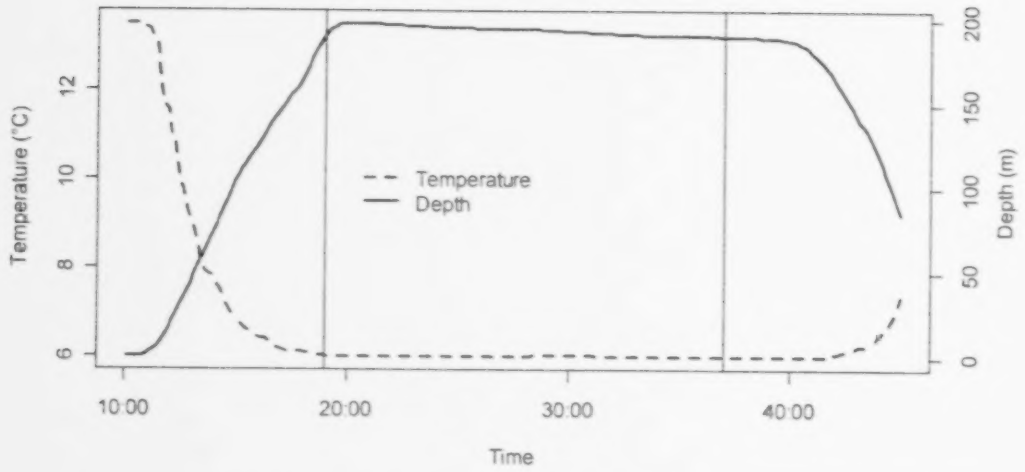

Figure 9. An example of a Seabird 39 temperature and depth profile. The vertical lines indicate the start and end of net contact with the sea floor.

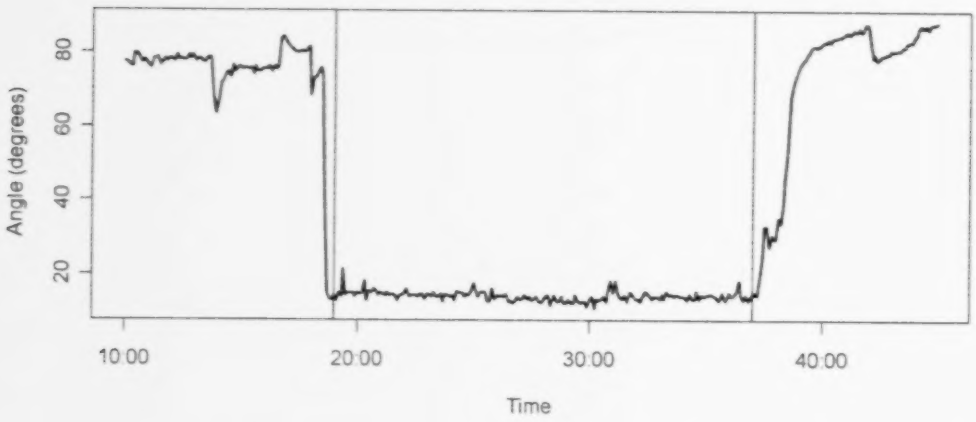

Figure 10. An example of an NMFS bottom contact sensor profile. The dashed vertical lines indicate the start and end of net contact with the sea floor. The angular readings between the start and end indicates the relative roughness of the sea floor.

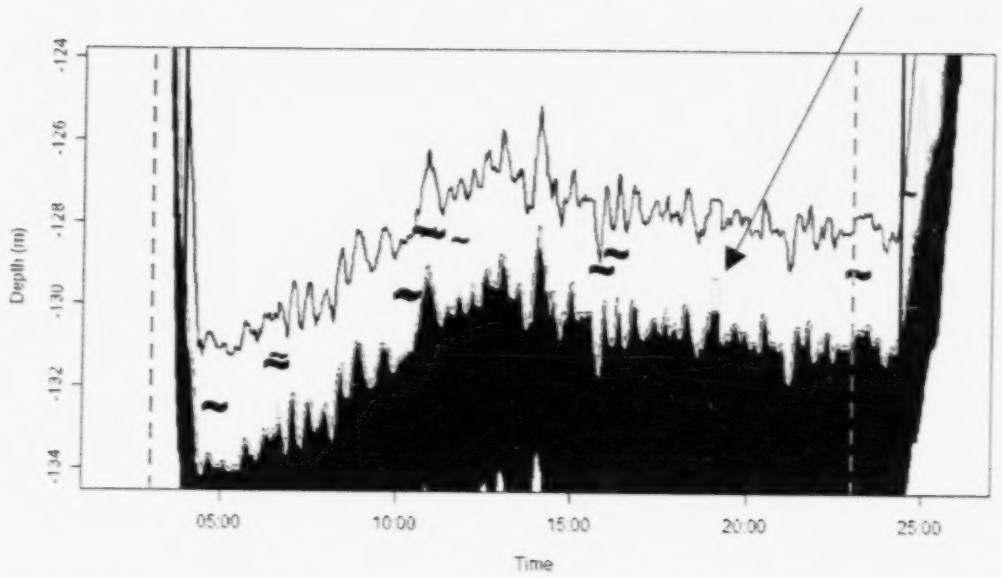

Figure 11. Example plot of net sensor data. The solid dark area at the bottom represents the sea floor. The light grey line directly above that represents the net footrope (note the region indicated by the arrow, showing where the net has risen off the sea floor for a brief period). The top line indicates the net headrope. The symbols between the headrope and the footrope indicate where fish have entered the net.

APPENDIX A: BRIDGE LOG

Tow	Date	Time	Latitude	Longitude	Depth (m)	Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable?
1	May 27	19:20	52.6858	130.6155	138	22	5.9	366	492.1	Yes
2	May 28	06:32	52.6898	130.8575	91	22	5.2	274	43.2	Yes
3	May 28	07:50	52.7122	130.8000	96	22	5.7	229	71.1	Yes
4	May 28	08:55	52.6757	130.7700	107	22	5	274	108.1	Yes
5	May 28	10:37	52.6918	130.6723	123	22	5.4	366	178.0	Yes
6	May 28	12:31	52.7205	130.6942	113	20	5.9	274	-	No
7	May 28	14:26	52.7202	130.6480	122	24	6.1	366	-	No
8	May 28	16:15	52.7058	130.5923	138	-	-	410	-	No
9	May 28	16:53	52.7198	130.6480	124	4	-	366	-	No
10	May 28	17:57	52.7753	130.6088	124	21	6.7	366	257.6	Yes
11	May 28	19:19	52.7592	130.5383	137	24	6.3	410	265.5	Yes
12	May 29	06:05	52.8340	130.8528	54	22	5.7	183	323.3	Yes
13	May 29	07:17	52.7888	130.8052	75	22	6.7	229	129.2	Yes
14	May 29	08:25	52.7673	130.8078	82	22	6.5	227	67.5	Yes
15	May 29	09:57	52.7512	130.8328	80	22	6.1	229	50.9	Yes
16	May 29	10:54	52.7423	130.8575	72	23	5.6	229	91.1	Yes
17	May 29	15:30	52.9742	130.9913	30	22	6.5	137	463.8	Yes
18	May 29	16:46	52.9628	130.9210	32	23	7.2	137	91.6	Yes
19	May 29	18:11	52.9177	130.9767	30	16	6.9	137	270.3	Yes
20	May 29	19:56	52.8332	130.9172	45	21	5.6	183	177.9	Yes
21	May 30	06:02	52.8993	130.8130	45	17	6.3	137	138.8	Yes
22	May 30	07:23	52.8817	130.6463	84	7	5.9	274	-	No
23	May 30	08:18	52.9287	130.6037	97	22	5.9	274	249.8	Yes
24	May 30	09:26	52.9675	130.6555	67	22	5.4	229	835.8	Yes
25	May 30	10:55	52.9903	130.7238	97	22	4.8	274	680.9	Yes
26	May 30	13:01	53.0110	130.7273	102	22	5.4	320	193.4	Yes
27	May 30	14:19	53.0232	130.7303	118	24	5	366	939.2	Yes
28	May 30	16:04	53.0568	130.7778	118	23	4.8	366	555.7	Yes
29	May 30	17:32	53.0230	130.7132	141	23	6.3	457	768.6	Yes
30	May 30	19:05	52.9973	130.8488	63	20	6.7	229	163.5	Yes
31	May 30	20:09	53.0085	130.8338	74	23	6.1	229	141.4	Yes
32	May 31	05:53	53.1005	130.8438	102	23	5.6	320	209.1	Yes
33	May 31	07:04	53.0578	130.9170	58	22	5.4	183	71.9	Yes
34	May 31	08:44	53.0308	131.0135	34	21	5.9	137	298.0	Yes
35	May 31	10:20	53.0777	131.1057	44	23	5.7	183	174.7	Yes
36	May 31	13:25	53.0857	131.4495	28	23	5.9	137	183.1	Yes
37	May 31	15:31	53.0453	131.3935	26	23	5.9	137	158.7	Yes
38	May 31	17:14	53.1788	131.4358	23	19	6.7	137	79.3	Yes
39	May 31	18:35	53.1998	131.3372	31	23	5.6	137	664.4	Yes
40	Jun 01	06:27	53.2600	131.3940	34	21	5	137	816.6	Yes
41	Jun 01	07:50	53.1943	131.2840	32	24	5.6	137	226.9	Yes
42	Jun 01	10:51	53.3380	131.6397	27	23	6.1	137	158.5	Yes
43	Jun 01	12:45	53.3642	131.6498	26	18	5.4	137	320.8	Yes
44	Jun 01	15:08	53.4582	131.4137	25	21	5.9	137	130.9	Yes
45	Jun 01	16:51	53.5068	131.3790	22	23	5.9	137	183.5	Yes
46	Jun 01	18:06	53.5628	131.3498	23	23	6.3	137	251.8	Yes
47	Jun 01	19:23	53.6112	131.3810	22	19	6.5	-	264.0	Yes
48	Jun 02	06:08	53.6563	131.2175	33	23	5.9	137	530.0	Yes
49	Jun 02	08:02	53.7563	131.0572	47	20	5.6	-	263.5	Yes
50	Jun 02	09:36	53.7732	131.0050	51	21	6.1	137	398.0	Yes

Tow	Date	Time	Latitude	Longitude	Depth (m)	Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable?
51	Jun 02	10:53	53.7910	130.9773	62	22	5.6	229	276.2	Yes
52	Jun 02	12:12	53.8038	131.0378	59	22	5.4	229	689.0	Yes
53	Jun 02	13:35	53.9190	131.0550	72	22	5.6	274	1104.7	Yes
54	Jun 02	15:23	53.9543	130.9990	59	22	5.7	183	670.8	Yes
55	Jun 02	16:37	53.9553	131.0672	71	16	5.7	229	445.8	Yes
56	Jun 03	06:08	53.9722	131.3472	24	23	5.2	137	306.0	Yes
57	Jun 03	07:52	54.0393	131.2660	26	23	6.3	137	220.4	Yes
58	Jun 03	09:03	54.0590	131.2897	25	22	5.9	137	310.0	Yes
59	Jun 03	11:00	54.0078	131.1313	39	22	5.2	137	67.2	Yes
60	Jun 03	12:07	54.0458	131.0835	71	22	5.6	229	1126.2	Yes
61	Jun 03	14:08	54.0623	131.0537	88	17	6.3	274	2527.0	Yes
62	Jun 03	16:02	54.0975	131.0713	67	22	5.4	183	1505.5	Yes
63	Jun 03	17:57	54.1892	131.1698	27	23	5.2	137	364.2	Yes
64	Jun 03	19:22	54.2042	131.2725	27	24	5.7	137	577.8	Yes
65	Jun 04	06:14	54.1698	131.7312	31	22	5.7	137	661.7	Yes
66	Jun 04	07:36	54.2097	131.7532	109	22	5.6	366	774.7	Yes
67	Jun 04	08:51	54.2285	131.7023	106	22	5.9	366	1405.3	Yes
68	Jun 04	10:24	54.2490	131.6335	109	22	6.3	320	1547.6	Yes
69	Jun 04	12:11	54.3058	131.4932	149	23	5.4	457	773.3	Yes
70	Jun 04	13:56	54.3280	131.4362	167	23	5.6	503	1057.7	Yes
71	Jun 06	06:06	54.4760	131.0328	111	23	5.7	364	754.3	Yes
72	Jun 06	07:49	54.4260	131.1253	123	24	5.9	366	1040.8	Yes
73	Jun 06	09:23	54.4537	131.1628	123	24	5.9	366	701.0	Yes
74	Jun 06	10:51	54.4882	131.2262	122	24	5.9	366	500.7	Yes
75	Jun 06	12:20	54.5547	131.3750	105	23	5.9	320	458.4	Yes
76	Jun 06	14:08	54.6548	131.4883	169	22	5.7	503	191.9	Yes
77	Jun 06	15:52	54.5725	131.2853	117	23	5.9	366	748.9	Yes
78	Jun 06	18:05	54.4502	131.4777	256	24	-	640	540.8	Yes
79	Jun 06	19:33	54.3573	131.5593	216	25	5.4	594	321.2	Yes
80	Jun 07	06:07	54.4398	132.0117	313	22	6.5	732	390.0	Yes
81	Jun 07	07:38	54.3968	132.1462	311	24	5.7	732	356.4	Yes
82	Jun 07	09:38	54.3487	132.0548	266	22	5.4	640	436.7	Yes
83	Jun 07	11:37	54.2950	132.2332	219	22	5.6	549	138.6	Yes
84	Jun 07	14:00	54.3457	132.6253	284	21	5.6	640	273.9	Yes
85	Jun 07	15:25	54.3697	132.6125	293	20	6.1	686	393.5	Yes
86	Jun 07	16:47	54.4092	132.6788	343	12	-	823	-	No
87	Jun 07	17:51	54.3803	132.7227	352	23	5.9	869	832.8	Yes
88	Jun 07	19:47	54.3973	132.8020	377	23	5.6	914	444.6	Yes
89	Jun 08	06:11	54.4230	132.7757	376	16	5.6	869	210.3	Yes
90	Jun 08	08:14	54.2853	132.9563	417	27	5.6	960	384.8	Yes
91	Jun 08	09:53	54.2720	132.8907	379	22	5.7	869	547.1	Yes
92	Jun 08	12:03	54.1932	132.8432	110	22	6.5	320	431.5	Yes
93	Jun 08	13:22	54.1622	132.7480	39	21	-	137	561.6	Yes
94	Jun 08	14:23	54.1653	132.7487	43	22	5.6	183	969.8	Yes
95	Jun 08	16:05	54.2300	132.6187	142	21	6.5	411	642.9	Yes
96	Jun 08	17:18	54.2420	132.6485	165	23	5.6	457	497.2	Yes
97	Jun 08	18:39	54.2945	132.6585	259	24	5.6	640	318.7	Yes
98	Jun 09	06:06	54.2628	132.4740	160	23	7	457	341.1	Yes
99	Jun 09	07:42	54.2155	132.3692	129	21	5.9	366	924.8	Yes
100	Jun 09	09:23	54.1358	132.5487	69	21	6.5	229	233.7	Yes

Tow	Date	Time	Latitude	Longitude	Depth (m)	Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable?
101	Jun 09	10:49	54.1385	132.3903	77	22	5.9	229	882.6	Yes
102	Jun 09	12:12	54.1355	132.2767	58	25	5.7	229	100.5	Yes
103	Jun 09	13:31	54.1207	132.2440	40	24	6.5	183	126.3	Yes
104	Jun 09	15:00	54.1398	132.1167	32	25	6.1	137	176.9	Yes
105	Jun 09	16:16	54.1345	131.9705	40	23	5.9	183	178.4	Yes
106	Jun 09	17:27	54.1437	131.8795	48	23	6.3	229	84.8	Yes
107	Jun 09	18:28	54.2007	131.8743	110	23	5.9	366	777.0	Yes
108	Jun 10	06:06	54.1952	132.2503	109	25	5.6	366	530.9	Yes
109	Jun 10	07:21	54.2148	132.2812	128	24	5.6	411	710.5	Yes
110	Jun 10	08:31	54.2163	132.1957	122	21	5.6	366	304.3	Yes
111	Jun 10	09:33	54.1987	132.1930	100	22	5.4	320	384.0	Yes
112	Jun 10	10:48	54.2183	132.0363	126	22	5.9	406	2631.6	Yes
113	Jun 10	13:03	54.2700	132.0612	184	22	6.7	549	354.2	Yes
114	Jun 10	14:20	54.2498	131.8472	179	23	6.5	549	185.0	Yes
115	Jun 11	06:24	54.4688	131.2415	129	22	5.9	411	706.7	Yes
116	Jun 11	07:50	54.4160	131.3020	215	24	6.5	640	1175.6	Yes
117	Jun 11	09:14	54.3942	131.3410	216	23	6.3	640	1140.6	Yes
118	Jun 11	10:46	54.3592	131.3688	180	23	5.7	549	1357.0	Yes
119	Jun 11	12:18	54.3797	131.2352	84	22	5.9	274	738.6	Yes
120	Jun 11	13:57	54.3428	131.2617	102	23	6.3	320	1849.3	Yes
121	Jun 11	15:32	54.3098	131.3707	109	23	7	366	1420.7	Yes
122	Jun 11	17:00	54.2898	131.1888	53	21	5.9	183	215.2	Yes
123	Jun 12	06:28	53.1648	130.8858	99	21	5.6	274	107.5	Yes
124	Jun 12	07:52	53.1677	130.8725	100	21	5.9	274	109.1	Yes
125	Jun 12	08:57	53.1263	130.9087	86	21	5.9	274	193.0	Yes
126	Jun 12	10:38	53.1003	130.8715	91	21	5.9	274	320.8	Yes
127	Jun 12	11:59	53.0747	130.7942	119	21	5.9	366	665.2	Yes
128	Jun 12	13:41	53.0277	130.9105	30	21	5.6	137	741.6	Yes
129	Jun 12	15:11	53.0337	131.0592	32	21	5.6	137	164.0	Yes
130	Jun 12	17:25	53.0008	131.2842	32	21	5.7	137	213.4	Yes
131	Jun 13	07:07	52.9218	130.5545	104	22	6.1	320	56.6	Yes
132	Jun 13	08:02	52.9165	130.5110	107	24	5.9	366	81.2	Yes
133	Jun 13	09:59	52.7955	130.3347	202	22	5.9	549	121.3	Yes
134	Jun 13	11:44	52.8070	130.1345	248	21	5.7	609	67.1	Yes
135	Jun 15	13:31	52.8428	129.8582	123	22	5.9	457	106.0	Yes
136	Jun 15	15:09	52.8103	130.0415	256	25	5	777	143.1	Yes
137	Jun 15	16:45	52.8513	130.1865	233	24	5.2	686	94.4	Yes
138	Jun 15	18:04	52.8843	130.1585	243	24	5	686	148.0	Yes
139	Jun 15	19:28	52.8990	130.1668	240	24	5.6	686	126.4	Yes
140	Jun 16	06:01	52.8637	130.4305	129	22	5.7	366	51.0	Yes
141	Jun 16	07:05	52.9000	130.4077	130	24	5.6	411	159.2	Yes
142	Jun 16	08:17	52.9025	130.4457	126	22	5.2	411	56.8	No
143	Jun 16	09:26	52.9372	130.4697	124	14	5.2	366	81.3	No
144	Jun 16	10:16	52.9218	130.4708	124	25	-	320	146.1	Yes
145	Jun 16	11:28	52.9045	130.5013	119	22	5.7	320	84.9	Yes
146	Jun 16	13:12	52.8443	130.3228	203	24	5.9	549	316.9	Yes
147	Jun 16	14:30	52.9012	130.2753	216	24	5.6	640	143.5	Yes
148	Jun 16	16:04	52.9743	130.2578	217	23	5.4	593	116.6	Yes
149	Jun 16	17:16	53.0072	130.2705	215	22	5.6	594	154.5	Yes
150	Jun 16	18:45	53.0288	130.1605	224	24	5.9	640	216.6	Yes

Tow	Date	Time	Latitude	Longitude	Depth (m)	Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable?
151	Jun 16	20:09	53.0990	130.1912	173	25	5.9	457	576.4	Yes
152	Jun 17	06:22	53.0265	130.3405	201	22	5.6	549	177.9	Yes
153	Jun 17	08:03	52.9545	130.4078	155	22	5.7	411	286.0	Yes
154	Jun 17	09:31	52.9642	130.5513	98	21	5.6	229	183.8	Yes
155	Jun 17	11:43	52.9933	130.5700	92	22	5.9	274	229.2	Yes
156	Jun 17	13:11	53.0093	130.5113	117	21	5.9	320	63.1	Yes
157	Jun 17	14:58	53.0345	130.6127	92	24	5.7	274	71.0	Yes
158	Jun 17	16:15	53.0620	130.6612	99	21	5.6	274	52.8	Yes
159	Jun 17	17:57	53.0972	130.7667	125	24	5.9	411	229.2	Yes
160	Jun 17	19:19	53.1552	130.7400	142	25	5.9	457	165.9	Yes
161	Jun 18	06:23	53.1252	130.7822	127	24	6.7	411	265.9	Yes
162	Jun 18	07:52	53.2062	130.7773	142	21	5.4	457	87.0	Yes
163	Jun 18	09:50	53.2232	130.9657	89	23	5.9	274	137.5	Yes
164	Jun 18	11:12	53.2293	130.9912	83	19	5.9	229	280.5	Yes
165	Jun 18	13:07	53.2755	131.1858	40	22	5.9	137	282.2	Yes
166	Jun 18	15:04	53.3588	131.1118	39	21	5.6	137	151.3	Yes
167	Jun 19	06:31	53.4922	131.2855	27	23	5.4	137	312.4	Yes
168	Jun 19	08:00	53.5145	131.1740	30	21	5.9	137	175.8	Yes
169	Jun 19	10:26	53.5018	131.5977	22	23	5.9	137	1719.1	Yes
170	Jun 19	13:20	53.5963	131.3757	23	23	5.7	137	209.8	Yes
171	Jun 19	14:58	53.5738	131.1993	29	24	5.7	137	302.4	Yes
172	Jun 19	16:51	53.6847	131.0360	43	23	5.7	137	171.0	Yes
173	Jun 19	18:28	53.7487	131.2548	43	24	5.9	137	537.8	Yes
174	Jun 19	19:57	53.7912	131.2398	39	22	-	137	303.6	Yes
175	Jun 20	06:04	53.8408	131.3648	22	24	5.7	137	519.0	Yes
176	Jun 20	07:31	53.8358	131.3407	22	18	5.9	137	317.7	Yes
177	Jun 20	09:59	53.9435	131.3043	23	22	5.7	91	525.6	Yes
178	Jun 20	12:10	53.9098	131.1738	40	21	5.7	137	241.7	Yes
179	Jun 20	13:34	53.9250	131.2075	38	22	5.7	137	265.8	Yes
180	Jun 20	15:59	54.1292	131.1300	32	21	6.5	137	353.6	Yes
181	Jun 20	17:20	54.1822	131.3268	23	21	5.9	91	306.6	Yes
182	Jun 20	18:44	54.2348	131.1507	26	19	5.2	91	297.5	Yes
183	Jun 20	20:41	54.1838	130.9630	63	21	6.1	137	541.6	Yes
184	Jun 21	06:08	54.0902	131.0115	98	22	5.9	274	1578.5	Yes
185	Jun 21	08:12	53.9995	131.0503	78	24	6.3	274	1245.1	Yes
186	Jun 21	10:16	54.0050	130.9410	82	22	5.9	274	532.5	Yes
187	Jun 21	11:50	53.8973	130.9250	78	20	6.1	229	769.7	Yes
188	Jun 21	13:22	53.8785	130.9620	96	19	5.9	274	718.1	Yes
189	Jun 21	15:24	53.8728	131.1513	50	21	5.4	137	188.5	Yes
190	Jun 21	16:44	53.8642	130.9505	94	20	5.9	274	969.3	Yes
191	Jun 21	18:25	53.8563	130.8777	86	22	5.2	274	1363.5	Yes
192	Jun 22	06:00	53.8248	130.8767	93	21	5.9	274	994.0	Yes
193	Jun 22	07:44	53.8130	130.6712	65	17	5.9	137	229.9	Yes
194	Jun 22	09:01	53.7775	130.6592	110	22	5.7	320	456.9	Yes
195	Jun 22	10:29	53.7642	130.6918	126	20	5.7	366	411.6	Yes
196	Jun 22	12:18	53.7208	130.6035	78	21	5.9	229	614.9	Yes
197	Jun 22	13:59	53.6835	130.5710	45	20	5.7	137	114.9	Yes
198	Jun 22	15:12	53.6602	130.5855	40	21	5.6	137	302.0	Yes
199	Jun 23	06:07	53.6550	130.7362	140	23	4.6	411	952.5	Yes
200	Jun 23	07:39	53.6585	130.8070	45	20	5	-	101.3	Yes

Tow	Date	Time	Latitude	Longitude	Depth (m)	Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable?
201	Jun 23	08:49	53.7045	130.8840	45	21	6.5	137	120.5	Yes
202	Jun 23	10:00	53.7263	130.9363	50	21	5.2	137	241.8	Yes
203	Jun 23	11:42	53.5798	130.8842	57	20	7.2	183	159.7	Yes
204	Jun 23	13:03	53.5988	130.8027	69	23	4.8	229	977.5	Yes
205	Jun 23	14:42	53.5982	130.7835	93	22	4.8	274	464.4	Yes
206	Jun 23	16:15	53.5130	130.8812	89	22	5.4	274	287.7	Yes
207	Jun 23	17:30	53.4910	130.8170	104	21	5	320	177.0	Yes
208	Jun 23	19:12	53.4955	130.9772	65	19	5.9	183	112.5	Yes
209	Jun 24	06:13	53.4120	130.6512	135	21	7.4	366	208.0	Yes
210	Jun 24	07:16	53.3963	130.6730	130	21	7	366	258.3	Yes
211	Jun 24	08:26	53.3995	130.7050	126	22	5.9	366	151.4	Yes
212	Jun 24	09:39	53.3770	130.7097	122	21	5.6	366	89.6	Yes
213	Jun 24	11:06	53.4027	130.8165	159	22	4.4	457	244.7	Yes
214	Jun 24	12:18	53.3967	130.8358	120	7	-	366	-	No
215	Jun 24	13:28	53.3862	130.8375	120	13	-	320	-	No
216	Jun 24	14:48	53.4530	130.9237	103	22	5.9	274	556.1	Yes
217	Jun 24	16:12	53.3723	130.9797	93	21	5.9	274	1202.5	Yes
218	Jun 24	17:53	53.3328	130.9195	110	20	5.4	320	419.6	Yes
219	Jun 24	19:00	53.3853	130.9130	124	23	6.5	366	366.4	Yes
220	Jun 25	06:05	53.3738	130.8382	126	23	4.3	366	68.2	Yes
221	Jun 25	07:20	53.3630	130.8270	131	20	5.9	366	110.6	Yes
222	Jun 25	08:43	53.3500	130.8017	139	21	5.9	411	258.4	Yes
223	Jun 25	10:04	53.2610	130.8447	116	23	5.6	320	611.3	Yes
224	Jun 25	11:22	53.2390	130.8818	110	22	6.3	320	284.6	Yes
225	Jun 25	13:11	53.1835	130.6805	160	22	5.9	457	351.8	Yes
226	Jun 25	14:50	53.0952	130.6732	117	25	5.2	411	248.7	Yes
227	Jun 25	16:45	53.1022	130.4017	200	21	5.9	549	261.7	Yes
228	Jun 25	18:25	52.9700	130.3488	193	23	5.6	549	268.7	Yes
229	Jun 25	20:48	52.7843	130.1852	240	23	5.7	640	191.8	Yes
230	Jun 26	06:19	53.0698	131.0010	54	20	5.9	137	48.1	Yes
231	Jun 26	07:21	53.1047	130.9762	60	19	6.5	183	112.8	Yes
232	Jun 26	09:37	52.9238	131.2892	33	19	-	91	185.1	Yes
233	Jun 26	12:47	52.8262	130.7287	76	19	5.7	183	37.7	Yes
234	Jun 27	06:55	52.6882	131.1140	57	21	5.7	183	85.7	Yes
235	Jun 27	10:09	52.8743	130.5982	102	21	6.1	274	109.3	Yes
236	Jun 27	11:21	52.7917	130.6082	118	22	5.7	320	163.8	Yes

APPENDIX B: CATCH BY TOW

Species	1	2	3	4	5	6	7	8	9	10
Arrowtooth flounder	2.40	0.40	0.40	1.40	1.80	-	-	-	-	0.18
Big skate	-	-	-	-	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	3.10	-	-	-	-	-	-	-	-
Butter sole	-	-	-	-	-	-	-	-	-	-
Canary rockfish	13.00	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	1.50	0.50	0.70	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	1.10	-	-	-	5.10	-	-	-	-	2.90
English sole	13.70	2.30	6.40	9.60	22.50	-	-	-	-	28.00
Eulachon	0.20	-	-	-	-	-	-	-	-	-
Flathead sole	15.70	-	-	-	10.00	-	-	-	-	21.60
Greenstriped rockfish	-	-	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	0.20
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	0.30	-	-	-	3.90	-	-	-	-	-
Longnose skate	-	-	-	-	-	-	-	-	-	-
Pacific cod	1.80	0.30	0.13	-	2.30	-	-	-	-	1.50
Pacific hake	-	-	-	-	-	-	-	-	-	-
Pacific halibut	-	3.50	13.70	-	11.00	-	-	-	-	4.30
Pacific ocean perch	-	-	-	-	-	-	-	-	-	-
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	11.20	7.50	45.10	0.40	-	-	-	-	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	1.40	0.30	0.40	-	-	-	-	-	-
Petrale sole	0.44	2.30	8.50	7.40	12.40	-	-	-	-	2.30
Quillback rockfish	-	-	-	-	-	-	-	-	-	4.70
Redbanded rockfish	-	-	-	-	-	-	-	-	-	-
Redstripe rockfish	2.40	-	-	-	-	-	-	-	-	-
Rex sole	126.30	2.60	15.10	20.80	82.10	-	-	-	-	149.30
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-	-	-
Sand sole	-	-	-	-	-	-	-	-	-	-
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	41.70	-	-	8.00	18.40	-	-	-	-	4.60
Slender sole	0.50	-	-	-	0.30	-	-	-	-	0.60
Southern rock sole	-	6.80	10.80	0.80	0.40	-	-	-	-	-
Spiny dogfish	37.30	6.40	6.60	11.10	4.50	-	-	-	-	24.80
Spotted ratfish	6.60	0.60	1.20	2.30	1.60	-	-	-	-	7.90
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	2.30	0.04	-	0.30	1.30	-	-	-	-	0.90
Widow rockfish	6.70	-	-	-	-	-	-	-	-	0.70
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	218.30	-	-	-	-	-	-	-	-	-
Other	0.90	0.85	-	0.20	-	-	-	-	-	1.50
Total	491.64	43.29	71.13	108.10	178.00	-	-	-	-	255.98

Species	11	12	13	14	15	16	17	18	19	20
Arrowtooth flounder	16.20	-	-	-	0.90	0.04	-	-	-	-
Big skate	-	18.80	-	-	-	-	11.30	-	-	9.70
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	-	-	-	-	-	-	-	-	-	-
Canary rockfish	1.70	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	116.10	1.00
Curlfin sole	-	0.60	0.70	0.90	0.90	0.20	3.40	1.50	1.70	0.40
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	38.20	-	-	-	-	-	-	-	-	-
English sole	1.70	8.60	1.80	1.80	3.30	2.00	2.00	0.60	-	1.10
Eulachon	1.00	-	-	-	-	-	-	-	-	-
Flathead sole	43.60	-	-	-	-	-	-	-	-	-
Greenstriped rockfish	-	-	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	7.70	-	-	4.90	11.10	-	-	-	-
Longnose skate	-	-	-	-	-	-	-	-	-	-
Pacific cod	1.40	1.80	0.16	0.04	0.39	0.30	-	-	42.30	27.60
Pacific hake	-	-	-	-	-	-	-	-	-	-
Pacific halibut	-	19.80	21.30	5.70	-	3.40	89.90	58.50	-	7.30
Pacific ocean perch	-	-	-	-	-	-	-	-	-	-
Pacific sand lance	-	-	-	-	-	-	0.60	1.90	0.70	-
Pacific sanddab	-	1.30	2.60	3.20	8.50	6.00	-	-	-	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	0.40	0.20	0.30	1.80	0.20	0.20	0.10	0.10	23.70
Petrale sole	-	2.10	7.10	0.80	-	25.50	-	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-	-	-
Redbanded rockfish	-	-	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-	-	-
Rex sole	102.40	-	0.60	2.20	1.30	0.90	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-	-	-
Sand sole	-	-	-	-	-	-	3.80	2.60	4.70	0.80
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	0.20	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-	-	-
Slender sole	2.10	-	-	-	-	-	-	-	-	-
Southern rock sole	-	166.50	76.20	20.10	9.10	32.30	316.70	18.60	79.30	32.10
Spiny dogfish	49.40	32.80	4.20	12.40	7.60	22.30	34.90	7.60	18.70	14.10
Spotted ratfish	5.70	63.20	13.50	18.40	13.10	2.80	0.40	-	2.50	59.70
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	1.80	-	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-	-	-
Other	0.30	0.90	0.40	0.50	0.10	3.30	0.60	0.20	3.90	0.80
Total	265.50	324.50	128.76	66.34	51.89	110.34	463.80	91.60	270.20	178.30

Species	21	22	23	24	25	26	27	28	29	30
Arrowtooth flounder	-	-	4.40	47.80	27.60	19.40	58.40	62.60	92.20	-
Big skate	-	-	-	428.40	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	4.30	-	-	-	-	-	-	-
Butter sole	-	-	-	31.60	-	-	-	-	-	0.50
Canary rockfish	-	-	-	-	-	-	-	3.00	-	-
Copper rockfish	0.40	-	-	-	-	-	-	-	-	-
Curlfin sole	1.60	-	0.80	-	-	-	-	-	-	5.00
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	-	-	0.90	-	8.60	3.90	14.90	48.00	55.90	0.90
English sole	0.20	-	15.00	161.00	31.00	7.30	25.40	6.40	10.00	43.70
Eulachon	-	-	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	1.80	2.20	8.70	-
Greenstriped rockfish	-	-	-	-	-	-	-	2.40	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	1.10	-	-	-	-	-	-	-	-	-
Lingcod	0.70	-	9.00	-	-	5.00	7.40	13.30	3.30	-
Longnose skate	-	-	-	4.60	-	-	3.40	6.40	-	-
Pacific cod	0.20	-	0.42	4.70	8.10	-	2.80	3.70	6.20	0.14
Pacific hake	-	-	-	-	-	-	0.90	1.40	16.10	-
Pacific halibut	14.90	-	5.30	-	2.60	-	3.30	-	3.60	23.80
Pacific ocean perch	-	-	-	-	-	-	-	-	-	-
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	28.70	11.20	49.50	20.10	8.30	-	-	15.00
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	0.20	-	0.80	32.20	39.00	7.50	9.10	23.80	0.20	4.80
Petrale sole	-	-	21.40	0.50	4.90	2.20	3.10	12.00	0.69	0.30
Quillback rockfish	1.80	-	1.60	-	-	-	0.90	6.50	-	0.80
Redbanded rockfish	-	-	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	0.30	-	-
Rex sole	-	-	15.90	-	91.10	91.10	159.60	273.20	415.30	5.50
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	0.50	2.10	-
Sand sole	-	-	-	-	-	-	-	-	-	-
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	0.40	4.00	2.20	-	-
Southern rock sole	18.40	-	3.30	95.60	-	-	-	-	-	1.20
Spiny dogfish	7.50	-	101.30	15.70	405.20	25.60	596.70	57.20	139.00	38.40
Spotted ratfish	91.50	-	30.80	1.30	13.20	4.80	37.30	23.50	12.30	22.70
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	-	-	4.10	-	-	1.00	1.70	0.40	0.43	0.03
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	5.20	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-	1.70	-
Other	0.20	-	1.90	1.20	0.10	0.90	0.20	1.50	0.80	0.80
Total	138.70	-	249.92	835.80	680.90	189.20	939.20	555.70	768.52	163.57

Species	31	32	33	34	35	36	37	38	39	40
Arrowtooth flounder	0.10	20.80	-	-	-	-	-	-	-	-
Big skate	-	-	-	19.50	6.30	-	-	-	6.90	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	-	-	0.30	-	0.60	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	0.40	-	-	1.70	1.50	2.40
Curlfin sole	4.50	-	5.40	1.40	3.90	-	1.50	-	0.20	2.40
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	2.70	6.60	-	-	-	-	-	-	-	-
English sole	32.10	10.70	11.40	5.90	22.20	1.70	2.50	1.40	1.30	14.50
Eulachon	-	7.60	-	-	-	-	-	-	-	-
Flathead sole	-	1.60	-	-	-	-	-	-	-	-
Greenstriped rockfish	-	0.60	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	14.50	-	0.20	-	-	-
Longnose skate	-	-	-	4.90	-	-	-	-	-	-
Pacific cod	0.35	8.80	-	3.00	1.70	29.90	32.00	4.10	3.80	2.70
Pacific hake	-	0.30	-	-	-	-	-	-	-	-
Pacific halibut	4.80	7.10	3.40	51.00	18.00	-	-	23.20	-	26.00
Pacific ocean perch	-	-	-	-	-	-	-	-	-	-
Pacific sand lance	-	-	-	11.50	-	0.20	-	-	0.10	-
Pacific sanddab	37.80	7.30	3.70	-	13.50	-	-	-	-	0.10
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	4.00	1.30	0.20	0.90	-	-	-	-	-	-
Petrale sole	0.90	4.20	6.20	-	-	-	-	-	-	-
Quillback rockfish	-	7.60	-	-	5.70	-	-	-	-	3.40
Redbanded rockfish	-	-	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-	-	-
Rex sole	28.00	84.50	0.70	-	-	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-	-	-
Sand sole	-	-	-	-	0.60	3.50	14.80	0.70	72.30	14.00
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	0.10	0.40	2.20	2.60	-	0.10
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-	-	-
Southern rock sole	0.39	-	2.60	46.40	26.40	68.20	52.50	18.00	65.30	57.70
Spiny dogfish	16.50	12.20	32.80	152.80	41.40	8.30	-	20.50	508.00	691.90
Spotted ratfish	9.50	7.00	5.00	0.20	14.50	69.30	51.10	3.60	0.50	-
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	-	19.90	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-	-	-
Other	0.10	1.00	0.20	0.50	4.90	1.60	1.90	3.51	4.45	1.44
Total	141.74	209.10	71.90	298.00	174.70	183.10	158.70	79.31	664.35	816.64

Species	41	42	43	44	45	46	47	48	49	50
Arrowtooth flounder	-	-	-	-	-	-	-	-	3.50	-
Big skate	0.60	2.50	-	13.10	10.05	-	-	0.90	-	4.20
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	-	7.30	11.50	2.20	0.30	-	0.40	2.70	-	-
Canary rockfish	-	-	-	-	-	-	-	-	-	-
Copper rockfish	10.80	-	-	-	-	-	-	0.70	0.40	-
Curlfin sole	0.10	0.30	-	0.20	-	-	-	0.90	1.60	1.20
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	-	-	-	-	-	-	-	0.10	-	-
English sole	0.20	14.50	19.30	26.20	42.60	74.10	52.00	192.90	3.80	0.40
Eulachon	-	-	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	-	-	-
Greenstriped rockfish	-	-	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	0.10	-	-	-	-	-	9.30	3.30	0.40	0.30
Lingcod	-	-	-	-	-	-	-	10.40	1.00	-
Longnose skate	-	-	-	-	-	-	-	-	-	-
Pacific cod	1.30	-	0.18	0.50	0.12	0.12	3.90	61.20	3.70	-
Pacific hake	-	-	-	-	-	-	-	-	-	-
Pacific halibut	28.80	52.30	-	8.50	-	47.00	134.70	4.60	-	31.80
Pacific ocean perch	-	-	-	-	-	-	-	-	-	-
Pacific sand lance	-	-	-	-	-	-	-	-	-	0.10
Pacific sanddab	-	-	-	-	-	-	-	5.50	0.30	-
Pacific staghorn sculpin	-	0.50	-	-	-	-	-	1.10	-	-
Pacific tomcod	-	-	-	-	-	0.10	-	7.10	0.70	0.10
Petrale sole	-	-	-	-	-	-	-	-	-	-
Quillback rockfish	6.80	-	-	-	-	-	-	-	0.40	2.00
Redbanded rockfish	-	-	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-	-	-
Rex sole	-	-	-	-	-	-	-	-	0.10	-
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	0.50	-	-
Sand sole	41.00	6.60	3.70	19.90	17.10	34.80	10.20	46.00	-	0.80
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	0.10	-	-	-	-	0.10	0.30	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-	-	-
Southern rock sole	86.60	5.20	5.20	34.90	58.20	50.40	20.00	66.40	38.50	6.20
Spiny dogfish	48.40	61.20	272.50	8.90	4.60	3.50	11.90	10.50	4.60	-
Spotted ratfish	-	-	-	3.90	52.30	18.80	0.90	75.40	197.90	347.40
Starry flounder	-	-	-	-	-	3.40	-	-	-	2.20
Walleye pollock	-	-	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-	-	-
Other	2.23	7.90	8.40	12.60	4.30	19.50	20.60	39.52	6.62	1.30
Total	226.93	158.40	320.78	130.90	189.57	251.72	264.00	530.02	263.52	398.00

Species	51	52	53	54	55	56	57	58	59	60
Arrowtooth flounder	2.40	51.10	137.90	1.90	133.30	0.10	-	-	-	233.00
Big skate	35.70	-	-	-	-	40.00	6.40	23.60	-	20.80
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	4.80	-	-	-	-	-
Butter sole	-	-	1.30	-	-	3.20	-	-	-	-
Canary rockfish	-	-	-	-	0.10	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	0.40	-	-	0.20	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	-	-	2.20	-	1.90	-	-	-	-	82.60
English sole	2.40	32.90	165.10	1.60	49.40	125.20	14.20	37.00	11.80	144.60
Eulachon	-	-	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	0.20	-	-	-	-	19.30
Greenstriped rockfish	-	-	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	4.00	-	-	-	-	-
Kelp greenling	0.40	-	-	4.30	0.10	-	-	-	-	-
Lingcod	-	9.90	0.50	4.70	1.60	-	-	-	-	-
Longnose skate	-	-	-	-	-	1.30	-	-	-	1.20
Pacific cod	0.60	31.10	251.90	10.80	81.50	0.55	7.90	2.60	0.30	132.30
Pacific hake	-	-	-	-	-	-	-	-	-	-
Pacific halibut	37.60	30.00	61.40	10.80	38.93	27.60	54.70	71.90	13.90	14.40
Pacific ocean perch	-	-	-	-	-	-	-	-	-	-
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	9.90	259.90	-	25.30	-	-	-	1.20	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	1.70
Pacific tomcod	0.70	0.70	110.80	-	34.70	13.90	-	0.30	2.70	68.00
Petrale sole	11.40	5.20	10.20	-	2.40	-	-	-	-	5.20
Quillback rockfish	-	-	-	12.60	29.00	-	-	-	-	-
Redbanded rockfish	-	-	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	0.60	-	-	-	-	-
Rex sole	-	-	18.20	-	12.60	-	-	-	-	157.80
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	0.30	0.60	555.70	-	0.30	-	0.40	-	56.90
Sand sole	1.70	2.30	29.70	-	0.90	20.50	1.10	12.30	4.90	1.20
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	0.10	0.90	0.60	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	1.40	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-	-	-
Southern rock sole	5.40	8.90	6.50	13.60	0.30	34.70	71.60	78.80	8.40	1.80
Spiny dogfish	6.20	-	6.70	-	-	0.30	2.00	6.70	-	2.10
Spotted ratfish	168.80	501.10	35.70	53.90	9.20	26.30	57.10	73.00	16.10	9.60
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	-	-	2.90	0.10	3.70	-	-	-	-	170.70
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	4.20	-	-	-	-	-
Yellowtail rockfish	-	-	0.90	-	3.60	-	-	-	-	-
Other	2.90	5.20	2.30	0.80	1.90	12.00	4.50	2.75	7.90	3.00
Total	276.20	689.00	1104.70	670.80	445.83	306.05	220.40	309.95	67.20	1126.20

Species	61	62	63	64	65	66	67	68	69	70
Arrowtooth flounder	451.80	245.94	-	-	29.00	512.80	1182.30	1136.90	381.50	542.90
Big skate	-	21.20	1.60	132.60	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	2.50	-	10.70	-	-
Butter sole	-	-	1.60	18.80	1.90	-	-	-	-	0.30
Canary rockfish	-	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	-	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	34.75	23.71	-	-	0.30	1.60	2.55	8.10	182.70	302.10
English sole	17.07	214.19	135.60	66.00	83.80	9.60	88.70	53.80	69.00	0.30
Eulachon	1.83	-	-	-	-	-	-	-	-	0.30
Flathead sole	3.05	29.45	-	-	-	-	-	0.40	0.70	-
Greenstriped rockfish	-	-	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	3.70	-	-	-	4.50	-
Longnose skate	-	-	3.30	-	-	-	-	-	-	3.70
Pacific cod	190.71	124.42	15.20	28.70	8.40	15.10	51.40	77.60	15.10	11.00
Pacific hake	-	-	-	-	1.60	35.20	6.90	1.80	1.00	-
Pacific halibut	2.90	28.70	101.80	124.00	156.30	12.90	3.80	-	-	-
Pacific ocean perch	-	-	-	-	-	-	-	-	-	3.00
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	-	-	10.10	-	-	-	-	0.30
Pacific staghorn sculpin	-	2.29	0.10	0.30	-	-	-	-	-	-
Pacific tomcod	26.83	319.00	1.70	-	114.39	-	-	-	-	-
Petrale sole	-	1.53	-	-	8.90	1.70	6.40	3.30	0.90	0.70
Quillback rockfish	-	-	-	-	-	-	-	-	-	-
Redbanded rockfish	-	-	-	-	-	-	-	-	-	44.70
Redstripe rockfish	-	-	-	-	-	-	-	0.60	-	-
Rex sole	146.94	101.74	-	-	-	25.80	15.30	92.20	42.10	17.10
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	3.05	123.16	8.00	-	2.30	0.60	-	-	-	2.92
Sand sole	-	40.16	3.90	6.00	-	-	-	-	-	-
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	5.50
Silvergray rockfish	-	-	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-	-	-
Southern rock sole	4.27	-	21.10	92.80	1.90	-	-	0.50	0.60	-
Spiny dogfish	-	-	-	1.70	-	2.10	6.10	8.40	16.10	31.00
Spotted ratfish	11.58	11.86	43.10	30.70	191.60	2.50	15.60	134.50	57.70	91.50
Starry flounder	-	-	-	47.70	4.00	-	-	-	-	-
Walleye pollock	1622.46	200.42	-	-	-	49.00	27.20	1.40	-	-
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	2.68	-	-	-	101.20	-	4.90	-	-
Other	9.76	15.02	27.20	28.50	43.51	2.10	-	2.50	1.40	1.30
Total	2527.00	1505.47	364.20	577.80	661.70	774.70	1406.25	1547.60	773.30	1058.62

Species	71	72	73	74	75	76	77	78	79	80
Arrowtooth flounder	296.79	314.43	273.06	294.62	123.18	52.28	232.05	180.07	24.73	8.42
Big skate	-	-	-	43.82	23.24	-	43.94	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	-	-	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	-	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	125.28	270.94	56.93	11.61	60.40	55.02	187.35	34.90	42.43	65.40
English sole	79.72	148.57	25.13	10.38	0.77	-	3.92	-	-	-
Eulachon	4.93	2.68	2.81	4.77	5.05	0.71	23.89	-	-	-
Flathead sole	4.09	1.74	1.23	6.03	29.45	-	31.47	-	-	-
Greenstriped rockfish	-	-	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	4.65	-	-	-	-	5.27	-	-	-
Longnose skate	6.69	-	-	8.41	-	0.89	0.87	18.62	1.96	15.87
Pacific cod	17.20	3.52	11.25	16.78	2.71	0.20	13.28	5.86	1.04	-
Pacific hake	1.57	7.39	0.91	2.60	-	0.87	2.45	8.21	7.42	23.08
Pacific halibut	4.72	11.91	145.28	36.90	21.76	-	10.44	-	5.99	-
Pacific ocean perch	2.70	3.31	-	0.22	-	0.37	0.24	3.47	5.40	7.18
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	-	-	-	-	-	-	-	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	-	-	-
Petrale sole	1.02	0.81	1.02	-	1.15	-	-	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-	-	-
Redbanded rockfish	-	-	-	-	-	-	-	35.47	10.03	8.61
Redstripe rockfish	-	-	-	-	-	-	-	-	-	-
Rex sole	21.10	25.87	144.26	23.02	17.26	6.13	23.71	13.84	23.88	11.53
Rougheye rockfish	-	-	-	-	-	0.07	-	3.63	0.28	21.84
Sablefish	29.36	40.76	6.90	8.01	10.13	3.59	13.04	69.89	63.20	135.25
Sand sole	-	-	-	-	-	-	-	-	-	-
Sandpaper skate	-	-	1.76	1.63	-	-	1.48	0.15	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	7.12	-	57.63	38.08	34.87
Silvergray rockfish	-	-	-	-	-	-	-	-	-	-
Slender sole	0.29	-	-	-	-	0.84	-	-	-	-
Southern rock sole	-	0.42	-	-	-	-	-	-	-	-
Spiny dogfish	-	-	-	4.33	64.42	1.53	23.85	2.59	9.51	5.58
Spotted ratfish	126.56	176.72	2.93	-	29.61	52.26	115.90	48.88	80.00	31.83
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	24.57	24.66	21.11	20.87	1.25	3.28	4.22	51.36	5.01	3.48
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	1.85	-	64.73	-	6.19	-	-	-
Other	7.70	2.44	4.57	6.70	3.31	6.76	5.32	6.26	2.22	17.07
Total	754.29	1040.82	701.00	500.70	458.43	191.92	748.88	540.83	321.18	390.01

Species	81	82	83	84	85	86	87	88	89	90
Arrowtooth flounder	9.21	12.15	11.55	18.22	27.51	-	40.52	21.06	10.17	28.96
Big skate	-	-	-	-	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	1.62	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	-	-	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-	-	-
Copper rockfish	0.93	-	-	-	-	-	-	-	-	-
Curlfin sole	-	-	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	68.91	17.85	0.33	51.70	47.14	-	68.19	99.73	46.32	24.44
English sole	-	-	-	-	-	-	-	-	-	-
Eulachon	-	0.09	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	-	-	-
Greenstriped rockfish	-	-	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-	-	-
Longnose skate	6.20	10.51	-	-	-	-	-	22.98	6.37	-
Pacific cod	-	-	1.90	6.80	-	-	-	-	-	-
Pacific hake	10.26	5.25	6.10	51.00	11.25	-	9.80	29.53	11.42	12.12
Pacific halibut	-	38.26	-	-	-	-	-	-	-	25.88
Pacific ocean perch	1.94	17.90	18.43	18.46	81.43	-	8.09	-	0.71	0.51
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	-	-	-	-	-	-	-	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	-	-	-
Petrale sole	-	-	-	-	-	-	-	1.23	-	1.98
Quillback rockfish	-	-	-	-	-	-	-	-	-	-
Redbanded rockfish	8.41	26.40	13.73	3.43	12.57	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-	-	-
Rex sole	7.11	5.11	7.38	8.70	21.60	-	43.48	27.03	8.36	44.56
Rougheye rockfish	18.79	26.36	-	20.77	92.26	-	11.53	12.01	3.56	4.64
Sablefish	60.94	36.28	8.63	48.81	30.94	-	548.71	99.36	50.63	201.51
Sand sole	-	-	-	-	-	-	-	-	-	-
Sandpaper skate	3.03	5.12	-	-	-	-	1.28	-	-	1.43
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	13.90	-	-	4.59	-	-	-	27.98	17.51	-
Shortspine thornyhead	18.70	13.47	5.27	11.90	40.77	-	26.02	37.32	17.08	16.41
Silvergray rockfish	-	-	6.62	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-	-	-
Southern rock sole	-	-	-	-	-	-	-	-	-	-
Spiny dogfish	-	-	-	-	-	-	2.66	-	-	-
Spotted ratfish	35.77	15.75	10.80	5.04	22.85	-	10.82	23.10	6.75	7.66
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	0.67	1.83	39.61	-	-	-	-	-	0.62	2.64
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	1.70	-	-	-	-	-	-	-
Other	91.57	204.31	6.55	24.44	3.57	-	61.69	43.23	30.75	11.98
Total	356.34	436.64	138.60	273.86	393.51	-	832.79	444.56	210.25	384.72

Species	91	92	93	94	95	96	97	98	99	100
Arrowtooth flounder	50.40	289.02	-	-	286.77	206.93	15.55	59.74	676.07	-
Big skate	-	-	3.03	8.17	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	3.47	-	-	-	-	-
Butter sole	-	-	-	-	-	-	-	-	-	-
Canary rockfish	-	1.53	-	-	-	-	-	3.67	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	-	-	-	-	-	-	-	-	0.33
Darkblotched rockfish	-	-	-	-	-	-	4.39	-	-	-
Dover sole	83.85	2.42	-	-	0.41	3.31	162.67	-	3.72	-
English sole	-	22.30	-	-	-	4.80	-	-	40.20	-
Eulachon	-	-	-	-	-	-	1.81	-	-	-
Flathead sole	-	-	-	-	-	-	-	-	-	-
Greenstriped rockfish	-	-	-	-	-	-	-	2.18	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	0.50	-	-	-	-	-	-
Lingcod	-	3.32	-	-	-	2.87	-	-	4.27	0.86
Longnose skate	31.13	5.17	-	-	27.49	-	-	-	-	-
Pacific cod	-	0.83	-	-	35.30	8.20	-	41.52	2.46	-
Pacific hake	2.06	-	-	-	-	-	1.83	-	-	-
Pacific halibut	-	11.70	1.23	5.49	12.56	-	-	5.93	11.09	17.18
Pacific ocean perch	0.65	-	-	-	0.83	55.68	3.31	103.37	0.90	-
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	1.26	0.85	-	-	-	-	-	-	0.72
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	-	-	-
Petrale sole	-	2.97	2.35	3.10	-	-	-	-	2.02	2.25
Quillback rockfish	-	-	-	3.87	-	-	-	-	-	51.08
Redbanded rockfish	0.63	-	-	-	-	-	1.48	12.28	-	-
Redstripe rockfish	-	-	-	-	-	0.56	-	-	-	-
Rex sole	71.66	13.24	-	-	6.00	33.50	40.31	5.39	21.29	-
Rougheye rockfish	13.37	-	-	-	-	-	6.51	-	-	-
Sablefish	242.10	-	-	-	-	-	8.14	-	-	-
Sand sole	-	-	-	-	-	-	-	-	-	-
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	31.89	1.15	-	-	-	-	23.46	-	-	-
Silvergray rockfish	-	-	-	-	72.59	25.20	-	65.48	47.80	-
Slender sole	-	-	-	-	-	-	-	-	-	-
Southern rock sole	-	-	11.72	13.30	-	-	-	-	-	5.20
Spiny dogfish	-	4.97	-	2.80	-	6.74	2.04	4.66	25.33	1.82
Spotted ratfish	10.47	69.12	542.45	930.24	63.39	42.29	42.67	17.56	28.43	132.88
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	-	-	-	-	94.06	73.44	0.30	20.10	56.89	-
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	1.88	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	37.63	29.56	-	-	-	-
Other	8.83	0.60	-	2.34	2.31	4.06	4.26	6.95	4.28	21.31
Total	547.04	431.48	561.63	969.81	642.81	497.14	318.73	348.83	924.75	233.63

Species	101	102	103	104	105	106	107	108	109	110
Arrowtooth flounder	458.86	-	3.95	-	41.63	7.51	662.45	287.81	558.29	72.44
Big skate	-	-	-	58.09	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	-	-	-	0.86	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	0.88	0.86	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	0.10
Dover sole	-	-	-	-	-	6.65	7.10	2.38	4.58	-
English sole	-	0.26	0.38	2.14	1.77	-	11.17	83.48	52.47	47.43
Eulachon	-	-	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	-	-	-
Greenstriped rockfish	-	-	-	-	-	-	0.35	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	4.00	5.94	-	-	19.21	-	-	7.15	-
Longnose skate	-	-	-	-	-	-	3.36	-	-	-
Pacific cod	4.71	-	0.06	5.39	-	3.77	3.67	-	-	2.26
Pacific hake	-	-	-	-	-	-	-	-	-	-
Pacific halibut	1.43	3.13	16.03	7.07	8.20	31.78	-	6.38	-	5.11
Pacific ocean perch	-	-	-	-	-	-	-	-	-	-
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	0.82	1.88	-	-	0.08	-	-	-	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	-	-	-
Petrale sole	-	1.68	2.77	-	16.43	3.51	4.03	0.73	4.24	1.85
Quillback rockfish	-	-	0.13	-	-	-	-	-	-	-
Redbanded rockfish	-	-	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-	-	-
Rex sole	-	-	-	-	-	-	39.85	31.69	46.74	40.36
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-	-	-
Sand sole	-	-	1.77	-	-	-	-	-	-	-
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	2.42	-	-	15.79
Slender sole	-	-	-	-	-	-	-	-	-	-
Southern rock sole	1.77	2.14	4.20	4.88	8.68	1.26	-	-	-	-
Spiny dogfish	328.25	8.45	3.60	7.22	53.81	-	10.31	35.02	8.93	51.60
Spotted ratfish	86.67	79.12	81.42	86.19	47.84	8.93	25.70	14.11	3.95	35.10
Starry flounder	-	-	-	4.70	-	-	-	-	-	-
Walleye pollock	-	-	-	-	-	-	0.30	62.39	11.52	27.15
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-	-	-
Other	0.82	0.11	3.50	0.31	-	2.15	6.28	6.87	12.60	5.08
Total	882.51	100.59	126.49	176.85	178.36	84.85	776.99	530.86	710.47	304.27

Species	111	112	113	114	115	116	117	118	119	120
Arrowtooth flounder	200.39	598.20	132.42	88.19	445.68	541.32	677.23	968.87	569.56	1149.07
Big skate	-	-	-	-	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	7.69	-	-	-	-	-	-	-	-
Butter sole	0.47	-	-	-	-	-	-	-	5.23	7.48
Canary rockfish	-	2.50	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	-	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	1.16	5.24	12.37	5.51	61.44	267.92	207.36	97.49	1.03	0.34
English sole	35.55	87.47	10.00	0.42	15.64	-	-	-	78.53	596.55
Eulachon	-	-	-	2.14	1.30	-	2.00	1.26	-	-
Flathead sole	-	-	-	-	2.16	-	-	-	-	3.58
Greenstriped rockfish	-	-	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	3.13	-	-	-
Longnose skate	-	-	-	-	4.52	70.36	-	33.16	-	5.99
Pacific cod	27.37	1.20	15.42	11.12	34.81	-	-	0.81	46.56	48.06
Pacific hake	-	-	-	10.42	8.33	11.78	1.22	1.46	-	-
Pacific halibut	-	-	2.80	-	17.65	16.00	-	27.21	1.95	-
Pacific ocean perch	-	-	63.43	3.14	2.16	-	3.91	0.27	-	-
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	-	-	0.36	-	-	-	-	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	0.67	-	-	-	-	-	-	-	-	-
Petrale sole	0.19	8.33	-	-	-	-	-	-	-	2.95
Quillback rockfish	-	-	-	-	-	-	-	-	-	-
Redbanded rockfish	-	-	13.55	12.06	3.36	43.98	25.05	6.07	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-	-	-
Rex sole	3.29	84.60	43.81	6.04	58.65	4.29	3.99	4.64	21.99	31.30
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	4.46	41.10	64.19	55.15	2.21	-
Sand sole	-	-	-	-	-	-	-	-	-	-
Sandpaper skate	-	-	-	0.52	12.07	6.36	16.48	1.09	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	2.38	1.71	-	14.17	3.79	9.72	-	-
Silvergray rockfish	7.32	10.94	8.25	7.98	8.80	-	-	-	-	-
Slender sole	-	-	0.63	-	-	-	-	-	-	-
Southern rock sole	-	-	-	-	-	-	-	-	-	-
Spiny dogfish	40.98	25.65	30.59	14.79	5.61	8.14	13.78	21.49	-	-
Spotted ratfish	57.98	43.42	10.35	9.35	2.51	86.99	89.46	122.96	1.94	1.01
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	2.63	0.42	2.33	6.77	7.65	51.58	21.64	3.34	0.27	0.72
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	1754.58	-	-	-	-	-	-	-	-
Other	5.95	1.00	5.89	3.58	9.47	11.60	7.37	1.96	9.35	2.11
Total	383.95	2631.24	354.22	183.74	706.63	1175.59	1140.60	1356.95	738.62	1849.16

Species	121	122	123	124	125	126	127	128	129	130
Arrowtooth flounder	734.86	19.18	12.22	15.70	0.33	23.31	471.80	-	-	-
Big skate	-	27.45	-	-	-	-	-	16.00	17.68	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	0.79	-	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	-	-	-	-	-	-	0.50	-	0.51
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	2.81	-	1.23	0.14	-	0.07	6.48	-	-	-
English sole	213.47	12.67	3.92	1.33	0.78	64.28	7.48	0.94	0.19	0.71
Eulachon	-	-	-	0.04	0.10	1.44	0.07	-	-	-
Flathead sole	3.20	-	-	-	-	-	6.21	-	-	-
Greenstriped rockfish	-	-	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	21.35	-	-	14.12	74.07	-	8.88	-	-
Longnose skate	23.72	-	-	2.81	-	-	-	-	-	-
Pacific cod	73.02	0.12	7.41	5.70	-	1.78	6.40	489.10	0.25	0.41
Pacific hake	-	-	-	-	-	-	-	-	-	-
Pacific halibut	162.35	30.64	-	-	69.41	7.16	2.59	19.89	40.73	42.91
Pacific ocean perch	-	-	-	-	-	-	-	-	-	-
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	11.22	1.88	1.20	34.13	-	-	-	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	0.29	-	-	0.10	0.60	-	-	-	-
Petrale sole	4.03	1.08	7.30	0.87	16.15	24.21	1.82	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-	-	-
Redbanded rockfish	-	-	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-	-	-
Rex sole	39.89	-	15.51	9.08	3.66	20.67	80.66	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	9.35	-	-	-	-	-	-	-	-	-
Sand sole	-	-	0.06	-	-	-	-	30.86	7.11	23.99
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-	-	-
Slender sole	-	-	-	0.04	-	-	0.73	-	-	-
Southern rock sole	-	1.29	0.71	0.40	-	0.49	-	140.32	52.22	107.78
Spiny dogfish	142.15	-	23.38	52.10	16.70	33.06	69.13	9.64	29.90	5.30
Spotted ratfish	0.43	72.87	2.35	11.16	1.76	9.08	9.85	-	1.55	28.05
Starry flounder	-	5.76	-	-	-	-	-	-	3.14	-
Walleye pollock	5.47	-	16.52	6.82	68.84	19.70	0.19	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	5.17	-	-	-	5.44	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-	-	-
Other	5.12	17.09	5.32	0.95	-	1.29	1.71	25.41	11.38	3.71
Total	1420.66	214.96	107.15	109.02	193.15	320.78	665.12	741.54	164.15	213.37

Species	131	132	133	134	135	136	137	138	139	140
Arrowtooth flounder	5.67	4.66	13.78	4.47	23.21	10.94	14.10	18.02	13.48	5.47
Big skate	-	-	-	-	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	5.62	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	-	-	-	-	-	-	-	-	-	-
Canary rockfish	-	1.68	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	-	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	3.12	-	-	-	-
Dover sole	1.12	1.23	37.69	10.50	-	55.86	21.13	26.18	20.87	-
English sole	18.12	2.57	-	-	-	-	-	-	-	0.05
Eulachon	-	-	0.10	1.33	-	0.40	0.24	0.44	0.29	-
Flathead sole	1.05	4.55	17.35	0.63	-	8.29	-	2.02	0.94	-
Greenstriped rockfish	-	-	-	-	0.28	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	10.50	-	-	8.09	-	-	-	-	5.27
Longnose skate	-	-	11.33	-	-	6.74	5.11	3.02	3.06	-
Pacific cod	-	0.49	-	-	3.29	-	1.33	-	0.90	1.39
Pacific hake	-	-	5.12	3.22	-	8.04	8.71	7.17	3.39	-
Pacific halibut	-	21.60	-	-	11.35	-	-	-	-	-
Pacific ocean perch	-	-	0.50	5.86	1.57	2.90	6.19	4.85	1.46	0.51
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	-	-	-	-	-	-	-	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	0.31	-	-	-	-	-	-	-	-	-
Petrale sole	0.79	0.66	-	-	0.97	-	-	-	-	-
Quillback rockfish	1.27	-	-	-	-	-	-	-	-	0.85
Redbanded rockfish	-	-	8.78	10.80	-	6.81	15.95	33.39	25.99	-
Redstripe rockfish	-	-	-	-	8.73	-	-	-	-	-
Rex sole	7.10	19.14	6.18	1.11	0.25	3.62	0.30	1.39	0.45	9.66
Rougheye rockfish	-	-	-	1.72	-	3.51	1.83	9.12	7.86	-
Sablefish	-	-	-	1.46	-	18.97	3.91	13.22	-	-
Sand sole	-	-	-	-	-	-	-	-	-	-
Sandpaper skate	-	-	1.38	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	0.10	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	1.75	-	1.56	0.65	4.14	6.01	-
Silvergray rockfish	1.56	-	12.32	12.85	9.54	-	1.93	2.96	-	15.61
Slender sole	-	0.18	0.43	0.98	-	1.05	0.24	0.61	1.10	-
Southern rock sole	-	-	-	-	-	-	-	-	-	-
Spiny dogfish	8.61	4.28	1.81	6.01	11.09	7.44	3.67	1.24	-	6.76
Spotted ratfish	2.58	1.42	0.86	0.50	12.34	-	-	0.64	0.59	3.77
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	0.91	1.31	-	1.74	0.03	-	-	0.57	-	0.64
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	6.03	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-	-	-
Other	7.50	6.83	3.68	2.15	6.76	3.78	9.02	18.88	39.91	0.71
Total	56.59	81.10	121.31	67.08	109.25	143.03	94.31	147.86	126.30	50.69

Species	141	142	143	144	145	146	147	148	149	150
Arrowtooth flounder	21.25	0.85	4.64	10.21	6.42	77.61	30.94	57.62	58.54	106.85
Big skate	-	-	-	-	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	-	-	-	-	-	-	-	-	-	-
Canary ro_kfish	5.02	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	-	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	0.62	1.33	1.00	2.03	1.69	73.59	21.26	11.26	17.68	29.80
English sole	26.62	-	6.91	24.10	6.62	-	-	-	-	-
Eulachon	-	-	0.30	1.71	0.50	0.21	0.86	-	-	-
Flathead sole	0.62	-	6.80	16.19	7.21	28.76	25.84	2.62	0.71	1.19
Greenstriped rockfish	-	-	-	0.64	2.06	-	-	-	-	-
Harlequin rockfish	-	-	-	-	0.25	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	-	-	8.29	6.10	-	-	-	-	-
Longnose skate	-	5.53	-	-	-	6.20	-	1.08	3.59	5.95
Pacific cod	0.09	0.08	-	0.14	-	-	-	-	-	-
Pacific hake	-	-	-	-	-	26.71	7.49	6.90	9.95	3.89
Pacific halibut	-	-	-	7.03	3.00	-	8.79	-	-	-
Pacific ocean perch	3.11	-	-	-	-	12.08	8.38	4.46	12.40	10.41
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	-	-	-	-	-	-	-	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	-	-	-
Petrale sole	7.64	0.78	-	1.26	-	-	-	-	-	-
Quillback rockfish	-	4.64	3.64	3.58	4.95	1.01	-	-	-	-
Redbanded rockfish	-	-	-	-	-	7.96	13.46	6.72	26.95	34.07
Redstripe rockfish	-	-	12.95	12.23	-	-	-	-	-	-
Rex sole	53.19	12.72	28.54	37.64	22.00	19.33	11.80	3.44	2.63	0.42
Rougheye rockfish	-	-	-	-	-	-	1.92	1.06	0.30	-
Sablefish	-	-	-	-	-	5.97	1.89	1.07	0.88	-
Sand sole	-	-	-	-	-	-	-	-	-	-
Sandpaper skate	-	-	-	-	-	-	0.73	0.73	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	0.81
Silvergray rockfish	32.91	14.78	4.37	13.34	10.05	40.44	2.08	8.87	7.64	7.28
Slender sole	0.10	-	0.14	-	0.19	0.19	1.69	-	-	0.83
Southern rock sole	-	-	-	-	-	-	-	-	-	-
Spiny dogfish	-	7.40	-	-	10.78	8.09	1.07	2.30	5.81	4.64
Spotted ratfish	5.17	4.28	5.71	4.76	0.75	3.71	0.49	2.97	0.93	2.81
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	0.50	0.92	0.13	1.16	0.85	-	-	1.73	3.67	3.51
Widow rockfish	-	-	-	0.44	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	1.93	5.30	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-	-	-
Other	2.43	1.39	0.87	1.47	1.47	5.04	4.83	3.72	2.77	4.04
Total	159.27	56.63	81.30	146.22	84.89	316.90	143.52	116.55	154.45	216.50

Species	151	152	153	154	155	156	157	158	159	160
Arrowtooth flounder	99.10	66.56	11.05	81.02	153.51	4.51	2.90	3.32	117.75	14.47
Big skate	-	-	-	-	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	3.72	-	-	-	-	-	-	-	-	-
Butter sole	-	-	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	-	-	-	-	-	0.46	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	31.41	43.35	3.95	8.49	0.97	0.32	-	-	9.31	14.35
English sole	-	-	18.99	15.54	19.31	13.64	8.34	8.99	10.59	0.59
Eulachon	-	-	-	-	-	0.25	-	-	-	0.11
Flathead sole	0.54	2.15	13.81	0.50	1.11	1.20	-	-	15.30	7.20
Greenstriped rockfish	0.69	-	-	-	-	-	-	-	-	-
Harlequin rockfish	0.05	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-	3.96	2.78
Longnose skate	-	1.76	-	4.84	-	-	-	-	-	-
Pacific cod	7.93	1.32	6.54	3.41	0.12	0.72	0.50	3.56	0.92	3.47
Pacific hake	4.48	3.42	-	-	-	-	-	-	0.52	50.17
Pacific halibut	-	-	2.99	4.08	1.86	2.36	9.99	18.18	-	-
Pacific ocean perch	10.50	5.17	28.62	-	-	-	-	-	0.29	-
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	-	4.71	2.33	-	0.27	-	-	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	-	-	-
Petrale sole	-	1.01	0.97	1.32	6.52	-	16.64	0.62	1.68	-
Quillback rockfish	-	-	-	-	-	-	-	-	-	-
Redbanded rockfish	4.68	29.55	-	-	-	-	-	-	-	18.54
Redstripe rockfish	96.33	-	57.83	-	-	-	-	-	-	-
Rex sole	10.15	2.18	115.79	19.98	5.44	7.29	0.74	0.33	51.64	38.37
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	13.06	2.78	-	-	-	-	0.61	0.53	-
Sand sole	-	-	-	-	-	-	-	-	-	-
Sandpaper skate	-	0.74	-	-	-	-	-	-	-	-
Sharpchin rockfish	4.98	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	138.28	3.64	9.20	6.89	-	5.96	-	-	-	-
Slender sole	0.29	-	0.21	0.13	-	-	-	-	-	0.15
Southern rock sole	-	-	-	-	-	-	2.06	0.41	-	-
Spiny dogfish	21.91	-	2.93	4.03	13.62	2.03	18.06	5.60	9.85	4.42
Spotted ratfish	1.81	0.87	1.29	9.48	6.15	0.65	7.17	10.83	1.92	0.76
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	28.64	-	0.55	16.64	16.08	0.13	-	0.28	-	6.09
Widow rockfish	1.60	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	7.54	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	23.46	-	-	-	-	23.82	2.30	-	-	1.11
Other	49.08	3.03	8.36	2.71	2.19	0.21	1.53	-	4.89	3.31
Total	547.17	177.81	285.86	183.77	229.21	63.09	70.96	52.73	229.15	165.89

Species	161	162	163	164	165	166	167	168	169	170
Arrowtooth flounder	196.64	9.18	8.99	3.63	-	-	-	-	-	-
Big skate	-	-	-	-	-	19.99	8.53	1.69	-	10.21
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	-	-	-	-	-	-	-	-	-	-
Canary rockfish	1.84	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	16.59	1.71	-	-	-	-
Curlfin sole	-	-	-	-	5.49	-	0.35	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	3.08	7.56	-	4.47	-	-	-	-	-	-
English sole	0.42	-	18.25	44.24	1.95	-	12.86	35.06	5.63	24.35
Eulachon	-	-	-	-	-	-	-	-	-	-
Flathead sole	7.46	5.24	-	-	-	-	-	-	30.91	-
Greenstriped rockfish	0.78	-	-	1.14	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	1.22	2.51	0.05	-	-	-
Lingcod	3.52	-	-	0.62	0.92	1.15	-	-	-	0.16
Longnose skate	-	-	-	-	-	-	-	-	-	-
Pacific cod	12.14	2.73	28.44	9.03	0.23	-	1.31	1.13	-	-
Pacific hake	-	18.10	-	-	-	-	-	-	-	-
Pacific halibut	-	-	-	6.13	22.79	-	9.81	50.70	-	57.82
Pacific ocean perch	0.26	0.59	-	-	-	-	-	-	-	-
Pacific sand lance	-	-	-	-	-	-	-	-	2.54	-
Pacific sanddab	-	-	16.94	59.11	-	-	-	-	-	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	0.98	1.99	-	-	-	-	-	-
Petrale sole	2.05	-	11.25	2.99	-	-	-	-	-	-
Quillback rockfish	0.55	-	-	20.09	25.91	19.95	-	-	-	-
Redbanded rockfish	-	2.37	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-	-	-
Rex sole	21.53	11.60	3.38	18.89	-	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	0.75	-	-	-	-	-	-	-	-
Sand sole	-	-	-	-	-	-	6.09	2.95	5.50	5.00
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	1.64	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	-	7.04	-	-	-	-	-	-	-	-
Slender sole	0.11	-	-	-	-	-	-	-	-	-
Southern rock sole	-	-	-	0.90	21.69	2.20	23.38	24.09	16.58	15.01
Spiny dogfish	12.11	3.81	37.19	67.36	5.08	-	-	1.16	1655.88	3.11
Spotted ratfish	2.87	1.16	1.90	2.18	159.32	96.94	61.53	29.73	0.91	22.22
Starry flounder	-	-	-	-	-	-	-	-	-	5.79
Walleye pollock	0.49	10.88	8.33	23.87	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	3.91	-	-	-	-	-	-
Yellowtail rockfish	-	3.28	-	0.23	-	-	-	-	-	-
Other	-	2.66	1.83	8.04	20.84	6.84	188.41	29.26	1.03	66.09
Total	265.85	86.95	137.48	280.46	282.03	151.29	312.32	175.77	1718.98	209.76

Species	171	172	173	174	175	176	177	178	179	180
Arrowtooth flounder	-	-	0.31	0.09	-	-	-	-	0.03	-
Big skate	-	39.51	-	17.55	20.36	-	9.77	-	17.57	101.94
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	-	-	-	-	3.27	-	1.61	-	0.02	-
Canary rockfish	-	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	0.59	-	-
Curlfin sole	-	0.99	-	0.16	0.10	-	-	1.62	0.34	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	-	-	0.19	0.30	-	-	-	-	-	-
English sole	100.80	0.03	112.85	49.12	136.45	64.39	116.31	1.25	24.20	49.19
Eulachon	-	-	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	-	-	-
Greenstriped rockfish	-	-	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	3.33	-	4.29	2.11	1.54
Lingcod	0.30	-	0.27	-	-	1.16	-	1.98	0.96	3.75
Longnose skate	-	-	-	-	-	-	-	-	-	-
Pacific cod	-	0.00	1.97	1.89	8.54	30.81	24.84	5.07	1.21	1.16
Pacific hake	-	-	0.63	-	-	-	-	-	-	-
Pacific halibut	5.68	18.86	22.95	25.00	34.53	77.64	27.47	7.31	23.20	87.07
Pacific ocean perch	-	-	-	-	-	-	-	-	-	-
Pacific sand lance	-	0.05	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	3.17	5.77	-	-	-	-	0.49	1.09
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	73.83	2.55	31.53	-	10.17	-	14.15	0.27
Petrale sole	-	-	-	-	-	-	-	-	-	-
Quillback rockfish	-	-	3.76	-	-	2.10	-	7.59	-	3.19
Redbanded rockfish	-	-	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-	-	-
Rex sole	-	-	0.66	-	-	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	-	0.44	-	-	-	-	-	-	-
Sand sole	11.25	-	120.07	37.08	35.21	0.74	13.64	1.08	11.87	3.00
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	0.04	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-	-	-
Southern rock sole	39.68	7.50	27.27	69.22	98.45	44.34	178.67	11.38	50.74	60.06
Spiny dogfish	-	-	9.47	-	16.13	6.29	4.65	-	3.57	-
Spotted ratfish	121.85	96.75	36.94	78.48	38.90	68.44	45.27	137.90	35.02	26.93
Starry flounder	-	-	-	-	2.16	-	5.42	-	-	-
Walleye pollock	-	-	-	-	-	-	-	-	0.17	0.10
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	9.94
Yelloweye rockfish	-	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-	-	-
Other	22.75	7.23	122.25	16.39	93.29	18.15	87.74	61.52	80.12	4.17
Total	302.31	170.92	537.03	303.60	518.96	317.39	525.56	241.58	265.77	353.40

Species	181	182	183	184	185	186	187	188	189	190
Arrowtooth flounder	-	-	-	993.92	539.90	36.38	406.58	235.20	0.69	465.92
Big skate	24.14	39.29	-	-	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	5.87	-	-	-	0.37	-	-	-	-	-
Canary rockfish	-	-	-	1.65	-	-	-	-	-	0.52
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	-	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	-	-	-	61.04	1.85	1.03	8.94	9.60	-	13.35
English sole	112.60	19.73	-	24.40	110.20	41.62	18.25	137.59	13.47	55.55
Eulachon	-	-	-	32.81	-	-	-	-	-	-
Flathead sole	-	-	-	23.42	205.64	21.04	38.80	68.43	-	147.17
Greenstriped rockfish	-	-	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	0.41	-	-	-	-	-	-	0.83
Kelp greenling	-	-	1.90	-	-	-	1.65	-	8.19	-
Lingcod	-	-	7.87	-	-	-	0.98	-	-	0.33
Longnose skate	-	-	-	-	-	-	-	-	-	3.55
Pacific cod	7.56	90.56	1.86	43.15	58.11	7.13	34.93	28.62	1.30	50.87
Pacific hake	-	-	-	6.90	27.87	307.54	-	1.43	-	12.42
Pacific halibut	36.33	18.61	7.25	14.14	15.14	1.43	45.82	-	15.40	4.73
Pacific ocean perch	-	-	-	-	-	-	-	-	-	-
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	-	-	6.07	11.23	8.28	4.78	0.73	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	67.54	-	-	0.30	36.56	5.33	-	7.94	-	3.55
Petrale sole	-	-	1.11	0.78	5.80	0.30	3.54	7.91	-	-
Quillback rockfish	-	-	47.29	2.28	-	1.64	17.04	6.54	16.35	34.20
Redbanded rockfish	-	-	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	18.79	-	-	-	16.61	-	-	-
Rex sole	-	-	-	199.03	48.85	3.21	29.40	91.44	-	131.13
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	1.25	-	29.51	17.08	8.59	109.97	1.49	-	1.17
Sand sole	9.76	22.35	-	-	-	-	-	-	1.36	-
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	1.42	2.92	-	-	0.21	-	-	0.45
Slender sole	-	-	-	0.52	-	-	-	1.64	-	0.83
Southern rock sole	7.37	28.61	2.17	0.95	2.40	23.60	8.17	0.17	23.24	-
Spiny dogfish	6.08	-	0.33	-	7.89	-	-	1.12	-	0.20
Spotted ratfish	0.98	59.13	430.79	82.52	8.80	1.73	6.62	10.50	52.59	5.30
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	-	0.02	-	48.31	139.12	42.59	-	99.82	-	27.90
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	6.24	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	5.15	-	-	-	5.56	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-	-	0.86
Other	27.00	11.64	15.23	9.96	13.44	17.93	8.31	3.91	55.13	8.46
Total	305.23	297.43	541.57	1578.51	1245.09	532.32	769.66	718.13	188.45	969.29

Species	191	192	193	194	195	196	197	198	199	200
Arrowtooth flounder	673.57	259.86	1.77	71.17	49.05	48.20	-	-	298.55	-
Big skate	-	-	-	0.12	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	4.52	-
Butter sole	-	-	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	-	-	-	-	-	2.48	0.26	-	0.26
Darkblotched rockfish	-	-	-	-	-	-	-	-	0.99	-
Dover sole	8.34	30.13	0.70	96.48	85.52	14.37	-	-	309.86	-
English sole	25.42	41.47	19.23	0.44	-	47.08	2.41	-	0.67	0.01
Eulachon	-	-	-	-	-	1.48	-	-	-	-
Flathead sole	217.74	337.35	-	16.10	9.90	6.69	-	-	2.79	-
Greenstriped rockfish	-	-	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	-	7.40	0.50	-	-	5.10	0.45	-	0.22
Longnose skate	-	-	-	4.39	-	-	-	-	5.72	-
Pacific cod	47.07	53.01	111.51	18.78	13.61	2.67	-	-	21.56	1.00
Pacific hake	156.81	41.29	-	58.31	46.46	358.59	-	-	64.04	-
Pacific halibut	-	5.33	13.23	-	-	-	7.07	-	3.28	12.98
Pacific ocean perch	-	-	-	-	0.23	-	-	-	1.86	-
Pacific sand lance	-	-	-	-	-	-	-	-	-	0.17
Pacific sanddab	0.46	-	42.86	-	-	-	12.56	0.20	-	0.09
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	1.27	0.44	1.73	0.30	-	11.64	-	-	-	-
Petrale sole	3.22	1.44	0.79	-	-	-	6.37	-	0.51	-
Quillback rockfish	-	-	-	-	0.66	-	-	-	-	-
Redbanded rockfish	-	-	-	-	0.69	0.52	-	-	2.23	-
Redstripe rockfish	-	-	-	-	-	-	-	-	-	-
Rex sole	98.53	156.14	2.27	93.03	72.56	29.10	-	-	118.20	-
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	1.99	1.70	-	-	44.84	1.89	-	-	2.84	-
Sand sole	-	-	0.52	-	-	-	-	-	-	-
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	2.71	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-	4.36	-
Slender sole	0.48	4.44	-	0.20	1.47	-	-	-	5.08	-
Southern rock sole	-	-	0.88	-	-	-	6.03	4.53	-	22.19
Spiny dogfish	-	-	-	-	-	0.89	-	-	1.82	-
Spotted ratfish	3.62	3.02	19.69	3.79	2.34	12.52	65.16	292.49	12.45	32.50
Starry flounder	-	-	-	-	-	-	-	1.28	-	-
Walleye pollock	28.17	42.54	-	48.86	31.38	31.17	-	-	41.12	-
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	4.04	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	2.71	36.93	-	-	-	29.47	-
Other	96.76	15.85	7.26	41.70	15.90	47.97	3.71	2.72	17.81	31.88
Total	1363.45	994.01	229.84	456.88	411.54	614.78	114.93	301.93	952.44	101.30

Species	201	202	203	204	205	206	207	208	209	210
Arrowtooth flounder	-	-	1.85	131.57	110.68	49.19	36.76	3.85	152.73	149.51
Big skate	10.28	54.20	-	-	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	-	-	-	6.16	0.46	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-	-	-
Copper rockfish	-	8.99	-	-	-	-	-	-	-	-
Curlfin sole	0.30	1.82	-	0.75	-	-	-	1.57	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	-	-	-	-	14.68	1.27	1.65	-	2.46	5.82
English sole	-	0.12	3.46	26.54	13.25	26.47	11.34	7.90	7.22	5.58
Eulachon	-	-	-	-	-	0.03	-	-	-	-
Flathead sole	-	-	-	-	19.52	1.38	3.90	0.43	1.04	25.02
Greenstriped rockfish	-	-	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	9.31	0.40	-	-	-	-	1.85	-	-
Lingcod	-	18.81	0.77	-	-	-	-	0.35	-	-
Longnose skate	-	-	-	4.99	-	-	-	-	-	-
Pacific cod	0.09	8.20	4.45	68.35	14.23	27.18	15.44	1.15	10.92	11.97
Pacific hake	-	-	-	-	63.30	9.45	3.27	-	0.99	6.85
Pacific halibut	24.11	41.89	21.52	15.29	-	-	-	36.73	-	-
Pacific ocean perch	-	-	-	-	-	-	-	-	0.04	1.00
Pacific sand lance	0.05	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	0.54	194.51	-	-	-	0.31	-	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	255.58	9.25	8.12	1.77	0.31	-	-
Petrale sole	-	-	1.03	4.60	1.53	2.00	0.97	-	-	-
Quillback rockfish	-	15.09	0.65	-	-	-	-	3.01	0.64	-
Redbanded rockfish	-	-	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	34.64	1.15	-	-
Rex sole	-	-	0.17	-	156.84	109.88	51.58	-	4.05	10.34
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	-	-	2.95	5.31	1.48	0.58	-	-	-
Sand sole	-	-	-	-	-	-	-	-	-	-
Sandpaper skate	-	-	-	-	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-	0.11	-
Slender sole	-	-	-	-	-	-	0.47	-	-	0.10
Southern rock sole	19.92	9.61	34.28	6.81	21.17	0.64	-	9.99	-	-
Spiny dogfish	-	-	-	-	0.71	-	-	-	-	-
Spotted ratfish	44.59	64.99	83.71	151.54	15.45	4.34	2.30	33.48	14.33	14.00
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	-	-	-	119.52	20.26	9.67	2.23	-	3.94	23.94
Widow rockfish	-	-	-	-	-	-	-	1.44	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-	5.25	-
Yellowtail rockfish	-	-	-	-	-	-	1.28	-	-	-
Other	21.23	8.81	9.83	14.86	17.26	36.55	8.85	15.98	4.27	4.12
Total	120.57	241.84	162.66	1004.02	483.90	287.65	177.03	119.50	207.99	258.25

Species	211	212	213	214	215	216	217	218	219	220
Arrowtooth flounder	61.23	38.59	53.44	-	-	218.77	392.67	46.06	29.98	10.40
Big skate	-	-	-	-	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-	-	-	-	-
Butter sole	-	-	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	-	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	0.50	3.17	64.11	-	-	1.93	-	23.59	4.68	17.73
English sole	7.21	3.75	-	-	-	15.90	35.28	-	-	-
Eulachon	-	-	-	-	-	-	-	0.05	-	-
Flathead sole	4.36	0.26	0.33	-	-	25.80	-	0.15	21.16	0.42
Greenstriped rockfish	-	0.40	-	-	-	0.56	-	-	-	0.73
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	3.43	-	-	-
Longnose skate	-	-	-	-	-	-	-	-	-	5.00
Pacific cod	18.12	9.74	13.34	-	-	85.43	108.57	47.77	10.07	6.79
Pacific hake	-	2.24	-	-	-	3.50	-	-	51.82	3.71
Pacific halibut	24.79	5.18	-	-	-	5.72	24.96	-	-	-
Pacific ocean perch	-	5.86	1.57	-	-	-	-	-	-	0.81
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	-	-	-	-	372.99	-	-	-
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	0.79	7.85	-	-	-
Petrale sole	-	-	-	-	-	10.03	8.98	2.99	-	-
Quillback rockfish	-	-	-	-	-	-	-	-	-	-
Redbanded rockfish	-	-	36.29	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-	-	-
Rex sole	4.12	6.44	45.05	-	-	156.73	1.41	276.09	137.84	6.08
Rougheye rockfish	-	-	-	-	-	-	-	-	-	-
Sablefish	-	-	0.56	-	-	3.76	0.68	0.47	2.44	0.49
Sand sole	-	-	-	-	-	-	-	-	-	-
Sandpaper skate	-	-	0.76	-	-	-	-	-	-	-
Sharpchin rockfish	-	0.11	-	-	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	-	-
Silvergray rockfish	0.17	-	8.31	-	-	-	2.53	-	2.58	-
Slender sole	-	0.17	0.15	-	-	0.28	-	-	0.39	-
Southern rock sole	-	-	-	-	-	-	0.53	-	-	-
Spiny dogfish	-	-	5.93	-	-	-	1.10	1.62	-	-
Spotted ratfish	12.80	3.46	2.14	-	-	1.22	-	0.73	0.80	1.64
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	7.21	-	3.32	-	-	11.68	218.67	1.15	1.85	2.62
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-	92.37	-
Other	10.79	10.19	9.33	-	-	13.95	22.83	18.90	10.38	13.71
Total	151.30	89.56	244.63	-	-	556.05	1202.48	419.57	366.36	70.13

Species	221	222	223	224	225	226	227	228	229	230
Arrowtooth flounder	27.11	75.85	272.29	112.07	35.95	70.39	118.10	191.66	18.41	-
Big skate	-	-	-	-	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-	-	-	-	-
Bocaccio	-	-	4.49	-	-	-	-	-	-	-
Butter sole	-	-	-	-	-	-	-	-	-	0.06
Canary rockfish	-	-	-	-	-	-	-	-	-	-
Copper rockfish	-	-	-	-	-	-	-	-	-	-
Curlfin sole	-	-	-	-	-	-	-	-	-	1.80
Darkblotched rockfish	-	-	-	-	-	-	-	-	-	-
Dover sole	4.70	75.81	11.80	8.86	31.86	-	18.49	24.40	23.03	-
English sole	-	-	-	2.84	-	3.93	-	-	-	0.82
Eulachon	-	-	-	-	-	-	-	-	-	-
Flathead sole	0.92	7.24	8.98	1.27	6.70	0.60	1.25	1.87	-	-
Greenstriped rockfish	3.50	-	-	0.79	-	0.32	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-	-	-
Kelp greenling	-	-	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	28.15	-	-	-	-
Longnose skate	-	-	-	-	1.42	3.03	2.12	1.63	-	-
Pacific cod	11.59	3.02	18.85	14.28	6.28	54.10	2.19	-	12.27	0.10
Pacific hake	2.39	4.31	-	-	0.83	-	2.10	4.54	3.74	-
Pacific halibut	11.04	-	-	-	-	5.80	-	-	-	6.09
Pacific ocean perch	3.24	1.86	0.11	-	1.81	6.04	22.08	18.56	34.05	-
Pacific sand lance	-	-	-	-	-	-	-	-	-	-
Pacific sanddab	-	-	-	-	-	-	-	-	-	1.04
Pacific staghorn sculpin	-	-	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	-	-	-
Petrale sole	-	-	1.24	-	-	-	-	-	-	-
Quillback rockfish	4.51	1.69	-	7.22	-	-	-	-	-	-
Redbanded rockfish	-	10.86	-	-	27.99	-	71.65	7.93	17.45	-
Redstripe rockfish	-	-	-	-	-	-	-	-	-	-
Rex sole	13.18	50.56	206.80	98.82	7.01	4.24	3.52	5.35	9.57	0.10
Rougheye rockfish	-	-	-	-	0.88	-	0.84	-	3.41	-
Sablefish	-	1.42	-	1.34	0.80	-	4.27	0.81	4.41	-
Sand sole	-	-	-	-	-	-	-	-	-	-
Sandpaper skate	-	-	-	-	0.95	-	1.04	-	1.10	-
Sharpchin rockfish	-	0.32	-	-	5.48	-	-	-	-	-
Shiner perch	-	-	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-	-	-	8.88	0.64
Silvergray rockfish	0.33	5.49	6.09	0.59	6.71	-	-	7.87	2.10	-
Slender sole	0.16	0.35	0.47	0.25	-	0.12	0.24	-	-	-
Southern rock sole	-	-	-	-	-	-	-	-	-	0.64
Spiny dogfish	-	-	0.29	9.78	18.28	19.80	7.86	-	3.99	1.07
Spotted ratfish	3.24	1.67	2.64	2.02	1.26	1.40	-	-	0.57	16.75
Starry flounder	-	-	-	-	-	-	-	-	-	-
Walleye pollock	6.53	6.00	49.81	1.10	1.00	50.55	0.84	-	10.72	-
Widow rockfish	-	-	-	-	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-	-	-	-	-
Yelloweye rockfish	4.04	-	-	5.03	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	10.97	-	-	-	-	-
Other	14.03	11.92	27.55	18.29	185.55	0.23	5.05	4.01	38.00	19.19
Total	110.51	258.37	611.41	284.55	351.73	248.70	261.64	268.63	191.70	48.30

Species	231	232	233	234	235	236
Arrowtooth flounder	-	-	-	-	15.17	21.68
Big skate	-	-	-	-	-	-
Bigmouth sculpin	-	-	-	-	-	-
Bocaccio	-	-	-	-	-	-
Butter sole	-	-	-	-	-	-
Canary rockfish	-	0.69	-	0.23	-	-
Copper rockfish	-	1.57	-	-	-	-
Curlfin sole	0.77	-	1.13	-	-	-
Darkblotched rockfish	-	-	-	-	-	-
Dover sole	-	-	0.26	-	1.84	0.72
English sole	3.24	-	3.58	-	11.62	14.27
Eulachon	-	-	-	-	-	0.04
Flathead sole	-	-	-	-	15.46	5.18
Greenstriped rockfish	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-
Kelp greenling	-	0.17	-	1.17	-	-
Lingcod	-	1.12	0.20	0.15	-	-
Longnose skate	-	-	-	-	-	-
Pacific cod	0.37	0.34	0.77	-	-	10.95
Pacific hake	-	-	-	-	1.95	-
Pacific halibut	7.29	-	-	-	-	-
Pacific ocean perch	-	-	-	-	-	-
Pacific sand lance	-	-	-	-	-	-
Pacific sanddab	2.00	-	9.16	-	1.29	-
Pacific staghorn sculpin	-	-	-	-	-	-
Pacific tomcod	0.04	-	0.26	-	0.09	-
Petrale sole	0.17	-	-	-	-	-
Quillback rockfish	-	14.68	-	6.14	1.34	-
Redbanded rockfish	-	-	-	-	-	-
Redstripe rockfish	-	-	-	3.20	-	-
Rex sole	-	-	2.66	-	31.22	24.75
Rougheye rockfish	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-
Sand sole	-	-	-	-	-	-
Sandpaper skate	-	-	-	-	-	-
Sharpchin rockfish	-	-	-	-	-	-
Shiner perch	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-
Shortspine thornyhead	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	14.41
Slender sole	-	-	-	0.08	0.11	0.12
Southern rock sole	2.47	5.23	2.52	0.22	-	-
Spiny dogfish	3.22	-	1.96	0.96	15.35	37.89
Spotted ratfish	31.57	149.67	5.37	65.17	7.64	1.19
Starry flounder	-	-	-	-	-	-
Walleye pollock	-	-	0.19	-	0.88	11.52
Widow rockfish	-	-	-	-	-	-
Wolf eel	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-
Yellowtail rockfish	-	8.47	-	-	-	-
Other	61.60	2.83	6.25	8.17	5.31	21.05
Total	112.74	184.82	34.31	85.49	109.27	163.77